Foothill Ranch Towne Centre Residential General Plan Amendment and Zone Change Traffic Study

April 2012 Draft Report

Prepared For: Brookfield Residential

2073006460

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April 6, 2012

Draft Report

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Table of Contents

List of Figures

List of Tables

1.0 Introduction

This report presents the findings of a traffic study for the proposed residential project in the Foothill Ranch Towne Centre area in the city of Lake Forest in Orange County, California (hereinafter referred to as the proposed project). The purpose of the study is to evaluate the potential impacts of the proposed project in accordance with specified criteria and to provide traffic analysis data for the General Plan Amendment and Zone Change application and a circulation evaluation for the California Environmental Quality Act (CEQA) analysis prepared for the project.

1.1 Project Description

The proposed project is comprised of 151 attached residential units ("condominiums") and includes a General Plan Amendment (GPA) and Zone Change (ZC) for property within Foothill Ranch Towne Centre in the city of Lake Forest, which is bounded by Portola Parkway to the northeast, Auto Center Drive to the south, an existing retail center to the southwest and Bake Parkway to the northwest. The GPA and ZC application changes the project site from non-residential to residential use.

Portola Parkway, a five- to six-lane major arterial, is accessible by the project via Auto Center Drive, a two-lane local collector east of the project site, and to Bake Parkway and Lake Forest Drive, both four-lane primary arterials, via Auto Center Drive to Towne Centre Drive (a four-lane secondary arterial) south of the project site. The State Route 241 (SR-241) toll road can be accessed by the proposed project via Lake Forest Drive and Alton Parkway southeast and southwest of the project site, respectively, approximately a half mile to a mile from the project site. The project's regional destinations are also served by Interstate 5 Freeway (I-5) which is approximately five miles southwest of the project via Bake Parkway and Lake Forest Drive.

Figures 1-1 and 1-2 illustrate the location of the proposed project, and Figure 1-3 shows the proposed project access points on Auto Center Drive, both of which are full access with gated entry/exit. The primary access is just south of Portola Parkway and the secondary access is on the south end of the project site near Towne Centre Drive. It should be noted that the secondary access is restricted to residents only. To be submitted as a supplemental to this report, a subsequent analysis will be carried out that will provide a more detailed assessment of the project access in support of a site plan analysis level of approval.

1.2 Analysis Scope and Methodology

The analysis in this report identifies potential impacts of the proposed project based on existing traffic conditions and short-term (2015) and long-term 2030 future traffic conditions. Existing traffic conditions are based on observed traffic counts, whereas future traffic conditions were

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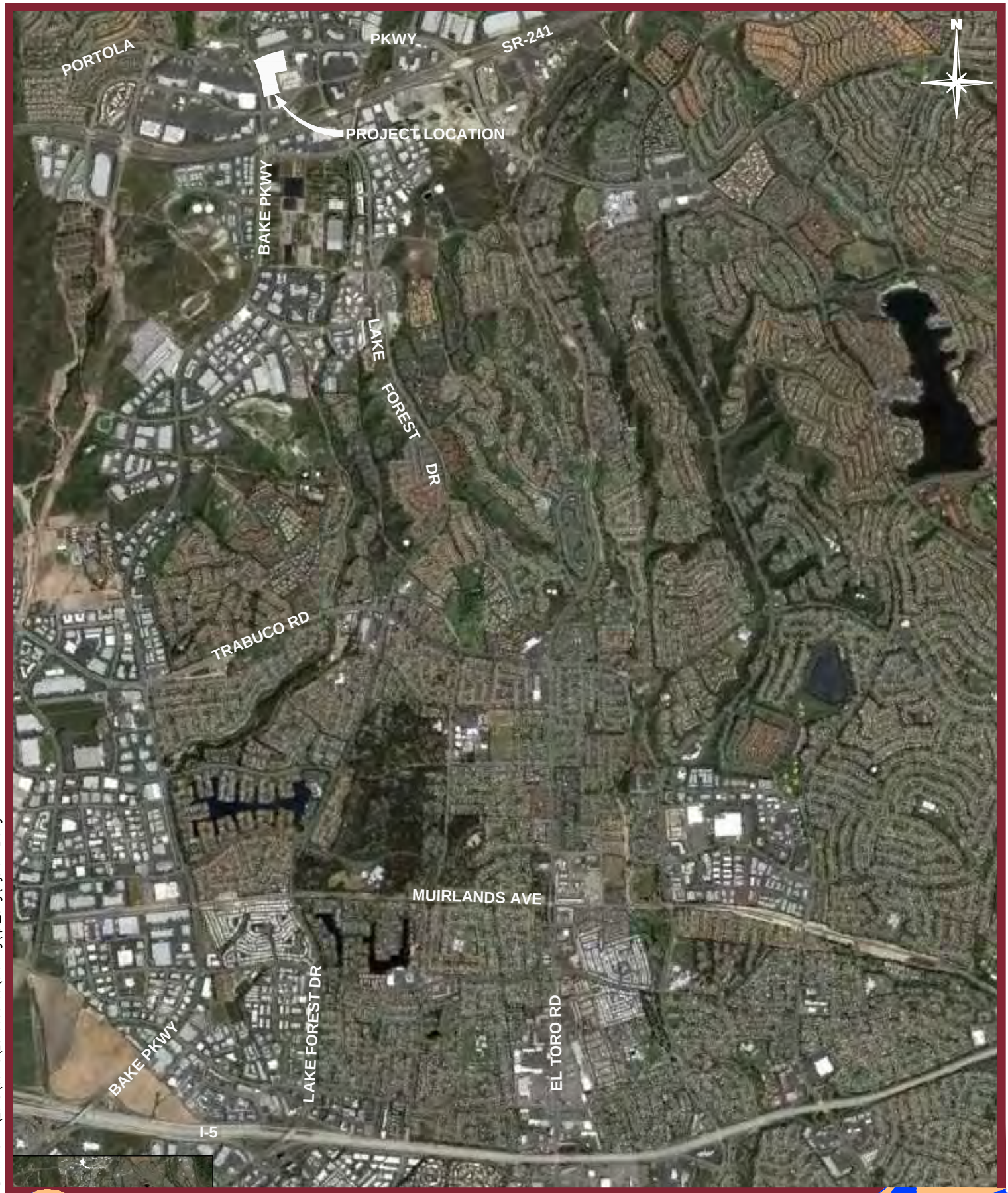
Project Location
- Local

Figure 1-1



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Project Location - City

Figure 1-2

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Proposed Project Access

Figure 1-3

prepared using the Lake Forest Traffic Analysis Model (LFTAM). The project site, which has been the subject of previous traffic analyses, was last approved in 2009 for non-residential development. However, in compliance with CEQA the proposed project will be compared to no-project conditions that assume the auto dealership use currently on the site. The forecasts for the proposed project are based on the LFTAM version used for the Shea/Baker project southwest of the project site. For purposes of this traffic analysis, full buildout of the proposed has been assumed to occur for each analysis time frame.

Major development projects approved and pending near the project vicinity are included in the future traffic conditions analyzed here along with any circulation system improvements related to those approved projects. These projects include Kaiser, Trumark, Shea/Baker, Whisler, Serrano Summit (on the Irvine Ranch Water District site), Sports Park (at Glass Creek) and Portola Center development.

The associated improvements that address any future deficiencies and accommodate future traffic due to the Vacant Land Opportunities Study Area (OSA) projects in the city of Lake Forest and outside traffic have been incorporated in a citywide mitigation program referred to as the Lake Forest Transportation Mitigation (LFTM) Program. In this traffic study, the LFTM improvements are assumed in the long-range conditions as are the buildout of all OSA projects.

1.2.1 Study Area

Figure 1-4 illustrates the study area defined in this traffic study and applied in the analysis that is summarized in this report for the proposed project. The study area limits (Portola Parkway to the northeast, Lake Forest Drive to the southeast, Rancho Parkway to the southwest and Bake Parkway to the northwest) were reviewed during the course of this study based on no-project versus with-project traffic forecast data to verify whether or not significant project impacts occur beyond the study area boundary based on the circulation system performance criteria applied in the study. Based on the findings of the project traffic impact analysis, no expansion of the study area beyond the limits presented here is warranted.

1.2.2 Traffic Model Background

As previous mentioned, the traffic forecast data for the proposed project was prepared using the LFTAM version from the Shea/Baker traffic study, and for analysis purposes, full buildout of the proposed project has been assumed to occur for each analysis time frame. The LFTAM traffic forecasting model is a focused sub-area model derived from the Orange County Transportation Analysis Model (OCTAM) and was specifically designed to provide detailed forecasting capability within the city of Lake Forest including the study area. The OCTAM is maintained by the Orange County Transportation Authority (OCTA), and has been developed according to the Orange County sub-area traffic modeling guidelines adopted by the OCTA. The OCTA has certified the LFTAM traffic model as being consistent with the OCTAM regional model.

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Traffic Analysis Study Area

Figure 1-4

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1.3 Performance Criteria

In this report, a set of performance criteria is utilized to identify future level of service (LOS) deficiencies on the study area circulation system and also to define impacts and peak hour intersection capacity utilization (ICU) values of significance. According to the Highway Capacity Manual (HCM) summarized in Table 1-1, traffic LOS is designated "A" through "F" with LOS "A" representing free flow conditions and LOS "F" representing severe traffic congestion. The intersection criteria involve the use of peak hour ICU values. The ICU ranges that correspond to LOS "A" through "F" are presented in Table 1-2. By practice, the ICU methodology assumes that intersections are signalized. LOS "D" (ICU not to exceed .90) is the performance standard for the intersections in the study area.

The performance criteria presented in Table 1-3 are based on LOS calculation methodology and performance standard that have been adopted by the city of Lake Forest and by the OCTA as part of the Congestion Management Program (CMP). The performance criteria applied here is the same as used in previous OSA traffic analyses. For ICU greater than the acceptable level of service, mitigation of the project contribution is required to bring intersection back to acceptable level of service if project causes the intersection to become deficient or to no-project conditions if project contribution is .02 or greater and the intersection is already deficient under no-project conditions.

1.4 References

1. "City of Lake Forest Vacant Land Opportunities Phase III Traffic Study," Austin-Foust Associates, Inc., July 8, 2005.
2. "City of Lake Forest Vacant Land Opportunities Phase III Alternative 7 (Hybrid Alternative) Traffic Study," Austin-Foust Associates, Inc., November 7, 2007 (Approved by Lake Forest City Council on June 3, 2008).
3. "City of Lake Forest Vacant Land Opportunities Phase III Alternative 8 Traffic Study," Austin-Foust Associates, Inc., September 21, 2009.
4. "City of Lake Forest Serrano Summit (IRWD Site) Traffic Study," Austin-Foust Associates, Inc., April 8, 2010.
5. "Village at Foothill Ranch Traffic Impact Study in the City of Lake Forest," KOA Corporation, August 2008. (Revised Approved in 2009.)
6. "Shea/Baker Ranch Traffic Study," LSA Associates, Inc., August 2011.
7. "Kaiser Permanente Foothill Ranch MOB Focused Site Access Analysis," Linscott, Law and Greenspan Engineers, April 18, 2011.

Table 1-1 Level of Service Descriptions – Signalized Intersections

Levels of service (LOS) for signalized intersections are defined in terms of control delay as follows:	
LOS	**Description**
A	LOS A describes operations with low control delay, up to 10 seconds per vehicle. This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.
B	LOS B describes operations with control delay greater than 10 and up to 20 seconds per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than the LOS A, causing higher levels of delay.
C	LOS C describes operations with control delay greater than 20 and up to 35 seconds per vehicle. These higher delays may result from only fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a given green phase does not serve queued vehicles, and overflows occur. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
D	LOS D describes operations with control delay greater than 35 and up to 55 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and high V/C ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	LOS E describes operations with control delay greater than 55 and up to 80 seconds per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent.
F	LOS F describes operations with control delay in excess of 80 seconds per vehicle. This level, considered unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of lane groups. It may also occur at high V/C ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.
Source: Highway Capacity Manual 2010, Transportation Research Board of the National Academies.	

Table 1-2 Intersection Level of Service Ranges (ICU Methodology)

Level of Service (LOS)	Intersection Capacity Utilization (ICU)
A	.00 – .60
B	.61 – .70
C	.71 – .80
D	.81 – .90
E	.91 – 1.00
F	Above 1.00

Table 1-3 Performance Criteria for Intersections Analyzed Within the Study Areas

V/C Calculation Methodology

Level of service based on peak hour intersection capacity utilization (ICU) values calculated using the following assumptions:

Saturation Flow Rate: 1,700 vehicles per hour per lane
Clearance Interval: .05
Right-Turn-On-Red Utilization Factor*: .75

* "De facto" right-turn lane is assumed in the ICU calculation if 19 feet from edge to outside of through-lane exists and parking is prohibited during peak periods.

Performance Standard

All study area intersections: Level of Service D (peak hour ICU less than or equal to .90).

Mitigation Requirement

For ICU greater than the acceptable level of service, mitigation of the project contribution is required to bring intersection back to acceptable level of service where the deficiency is caused by the project or to no-project conditions or better where the project adds to a an already deficient condition and the project contribution is .02 or greater (i.e., more than 1.0 percent).

2.0 Project Description

This report section describes the traffic characteristics of the proposed General Plan Amendment/ Zone Change (GPA/ZC) project. The project site access points are summarized. The trip generation estimates and traffic distribution patterns associated with the proposed project are then presented. This project description information is applied in the traffic impact analysis sections of this report to analyze the project under 2015 and 2030 conditions.

2.1 Location and Access

The proposed project is comprised of 151 attached residential units ("condominiums") and includes a General Plan Amendment (GPA) and Zone Change (ZC) for property within Foothill Ranch Towne Centre in the city of Lake Forest, which is bounded by Portola Parkway to the northeast, Auto Center Drive to the south, an existing retail center to the southwest and Bake Parkway to the northwest. The GPA and ZC application changes the project site from non-residential to residential use.

The major roadways that serve the project are Portola Parkway, Bake Parkway and Lake Forest Drive via Auto Center Drive and Towne Centre Drive. The State Route 241 (SR 241) toll road can be accessed by the proposed project via Lake Forest Drive and Alton Parkway southeast and southwest of the project site, respectively, approximately a half mile to a mile from the project site. The project's regional destinations are also served by Interstate 5 Freeway (I-5) which is approximately five miles southwest of the project via Bake Parkway and Lake Forest Drive.

Figure 2-1 illustrates the location of the proposed project, and Figure 2-2 shows the proposed project access points on Auto Center Drive, both of which are full access with gated entry/exit. The primary access is just south of Portola Parkway and the secondary access is on the south end of the project site near Towne Centre Drive. It should be noted that the secondary access is restricted to residents only. To be submitted as a supplemental to this report, a subsequent analysis will be carried out that will provide a more detailed assessment of the project access in support of a site plan analysis level of approval.

2.2 Trip Generation

The land uses and trip generation on the project site for existing, 2015 and 2030 under no-project and with-project conditions are summarized in Table 2-1. As seen in this table, the no-project condition assumes the existing auto dealer. As indicated in Table 2-1 and according to the trip generation estimates, the proposed project at buildout is forecast to generate around 102 AM and 118 PM peak hour trips and 1,231 daily trips. This results in nominal trip generation differences when the proposed project replaces the auto dealer use currently on the site.

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Project Location

Figure 2-1

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Proposed Project Access

Figure 2-2

Table 2-1 Project Trip Generation Summary

Land Use	Amount*	Unit	AM Peak Hour			PM Peak Hour			ADT
			In	Out	Total	In	Out	Total	
No-Project									
Auto Dealer	27.743	TSF	40	15	55	27	43	70	900
With-Project									
Auto Dealer	0	TSF	0	0	0	0	0	0	0
Condominium	151	DU	26	76	102	68	50	118	1,231
TOTAL			26	76	102	68	50	118	1,231
DIFFERENCE			-14	61	47	41	7	48	331
Trip Rates									
Auto Dealer (1)		TSF	1.50	.53	2.03	1.01	1.58	2.59	33.34
Condominium (2)		DU	.17	.50	.67	.45	.33	.78	8.15

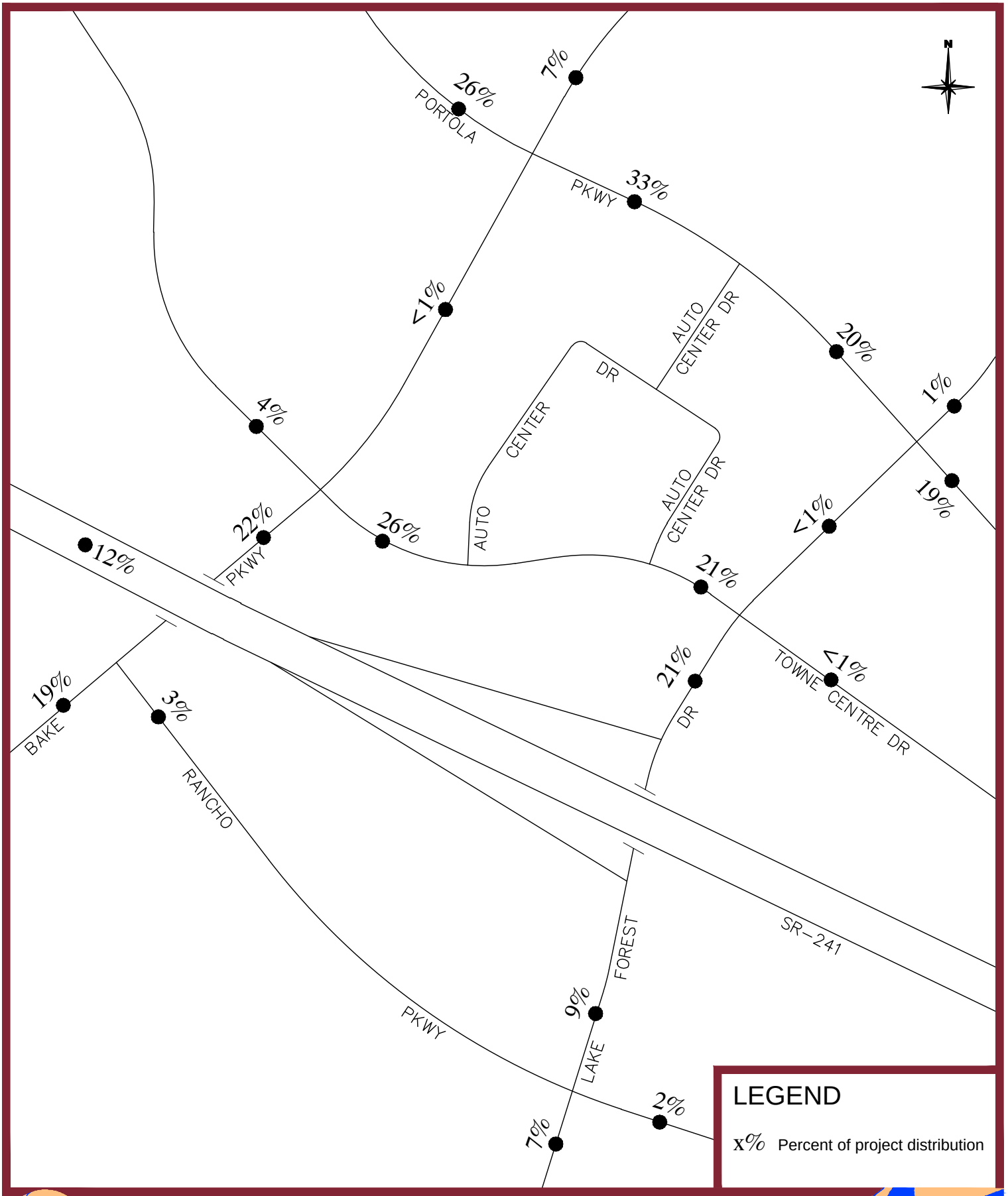
Abbreviations: ADT – Average Daily Trips DU – Dwelling Unit
TSF – Thousand Square Feet

(1) From ITE (Institute of Transportation Engineers' Trip Generation Manual, Eighth Edition)
(2) From OSA (Opportunities Study Area Traffic Study)

However, there is a change in peak hour directionality associated with residential use replacing non-residential use resulting in higher outbound volumes in the AM peak hour and higher inbound volumes in the PM peak hour.

2.3 Trip Distribution

Trip distribution patterns for the project site were developed using the LFTAM traffic model and are presented in Figure 2-3 for year 2030. The trip distribution patterns are based on the model's distribution of daily project traffic. These percentages differ slightly in the peak hours, and the traffic models use the individual peak hour distribution patterns to assign peak hour trips.



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2030 Project Trip Distribution

Figure 2-3

3.0 Transportation Setting

This chapter describes the transportation setting for the proposed project. Existing traffic conditions in the traffic analysis study area are summarized, and the future circulation systems planned for 2015 and 2030 study area are described.

3.1 Existing Conditions

The existing circulation system in the study area illustrated in Figure 3-1 remains the same for years 2015 and 2030 except for the intersection of Lake Forest Drive and Rancho Parkway which assumes improvements according to the Lake Forest Transportation Mitigation (LFTM) Program. Figure 3-1 shows the existing midblock lanes on arterial roadways, the number of existing travel lanes on freeway mainline segments, and the lane geometrics for the analysis intersections depicted here.

Existing traffic conditions in the study area were identified based on observed traffic counts. Current average daily traffic (ADT) counts and AM and PM peak hour turn movement counts at intersection locations in the study area were taken from counts collected in March 2012. The following sub-sections summarize the existing traffic conditions for the various components of the study area circulation system including arterial roads and intersections.

The purpose of this section is to also discuss the existing-plus-project analysis in order to comply with the California Environmental Quality Act (CEQA) which indicates that the baseline for assessing environmental impacts is generally the existing conditions at the time that the environmental document for the project is prepared.

3.1.1 Average Daily Traffic Volumes

Existing and existing-plus-project ADT volumes on the arterial roadway system in the study area are illustrated in Figure 3-2. The only measurable increase in ADT with the project occurs on Portola Parkway just southeast of Bake Parkway which increases from 24,000 ADT to 25,000 ADT. The ADT volumes are not used in the traffic impact analysis but are presented here to provide a reference point for the traffic forecasts and for other sections of the project EIR such as "Air Quality" and "Noise."

3.1.2 Peak Hour Intersection Levels of Service

Figures 3-3 and 3-4 present the peak hour turn movement volumes for the intersection locations that are analyzed (as depicted in figure 3-1) under existing and existing-plus-project conditions. Existing intersection capacity utilization (ICU) values were calculated using peak hour traffic count

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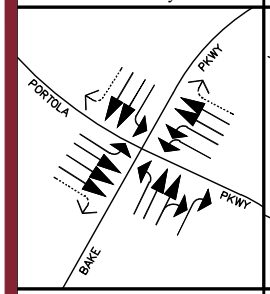
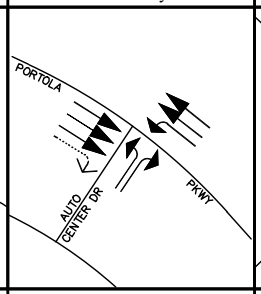
INTERSECTION LANES

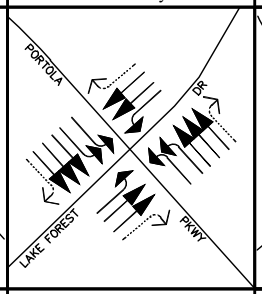
1. Bake Parkway & Portola Parkway



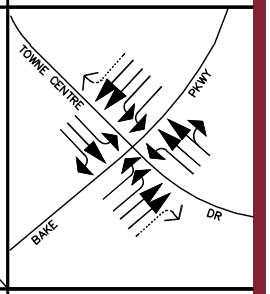
2. Auto Center Drive & Portola Parkway



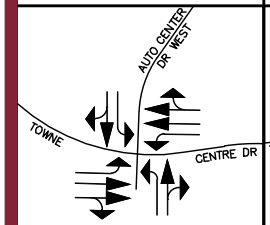
3. Lake Forest Drive & Portola Parkway



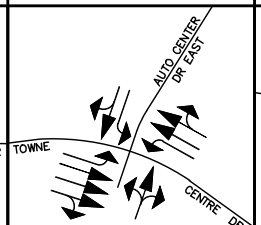
4. Bake Parkway & Towne Centre Drive



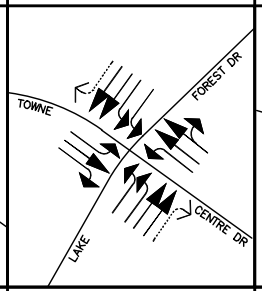
5. Auto Center Drive West & Towne Centre Drive



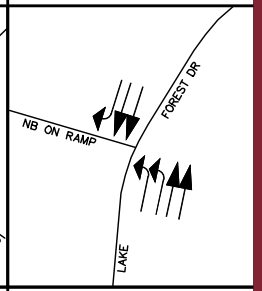
6. Auto Center Drive East & Towne Centre Drive



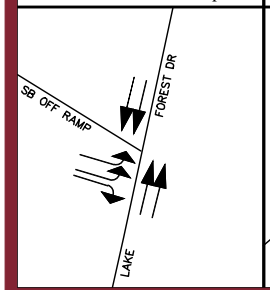
7. Lake Forest Drive & Towne Centre Drive



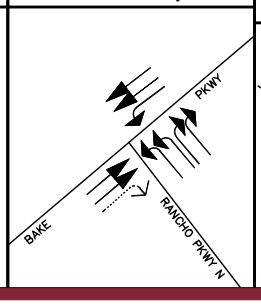
8. Lake Forest Drive & SR-241 NB On-Ramp



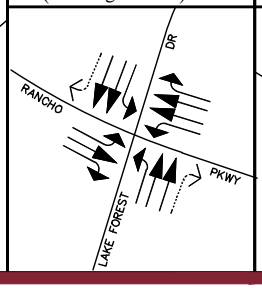
9. Lake Forest Drive & SR-241 SB Off-Ramp



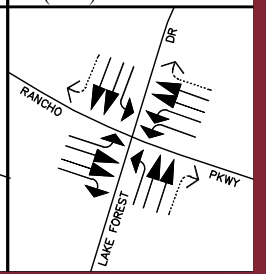
10. Bake Parkway & Rancho Parkway North



11. Lake Forest Drive & Rancho Parkway (Existing & 2015)

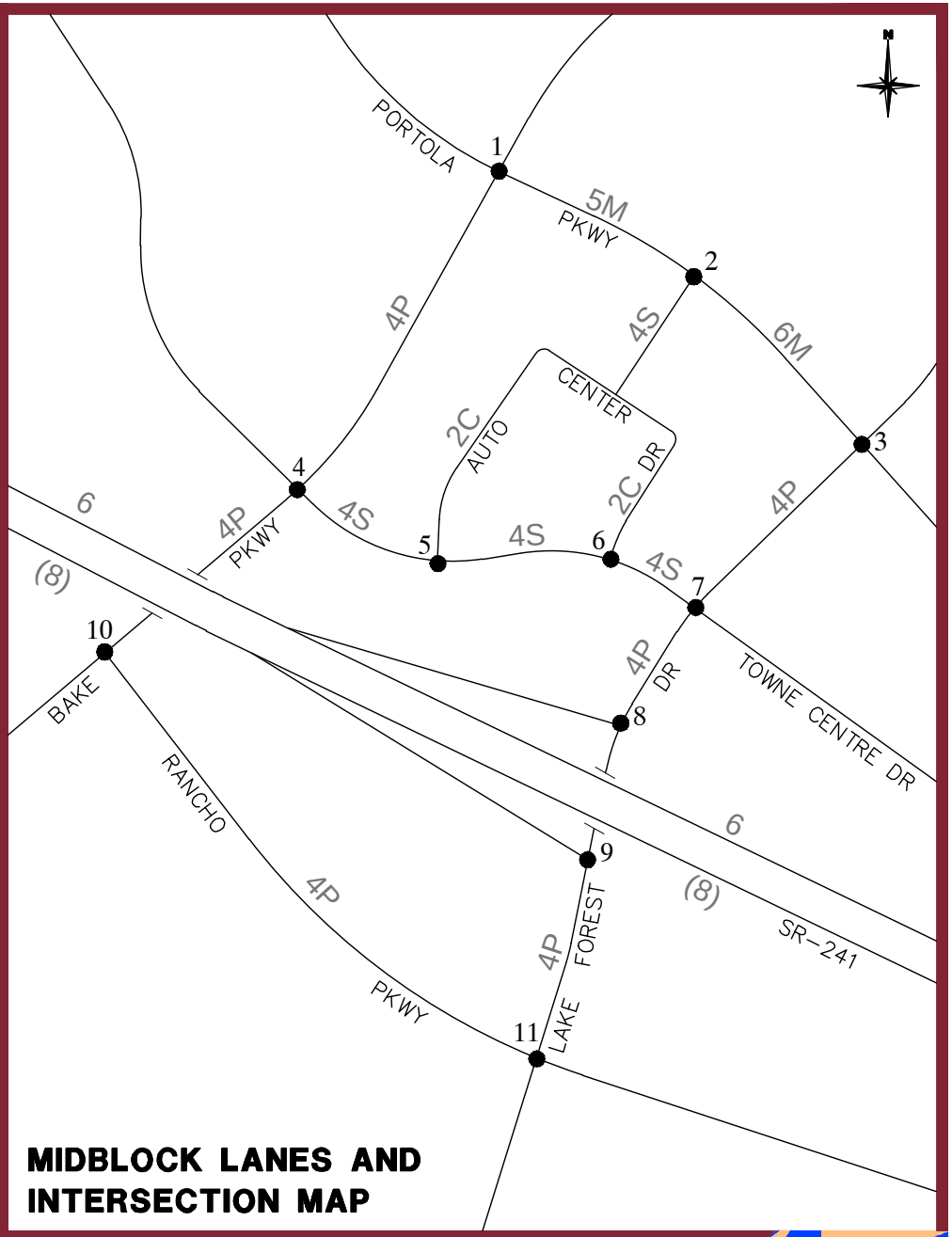


11. Lake Forest Drive & Rancho Parkway (2030)



LEGEND

- X — Intersection reference number
- Y — Midblock lanes - existing and 2015
- (Z) — Midblock lanes - 2030
- M — Major Arterial
- P — Primary Arterial
- S — Secondary Arterial
- C — Local Commuter/Collector Road
- De Facto Right-Turn



MIDBLOCK LANES AND INTERSECTION MAP

Circulation System within Study Area

Figure 3-1

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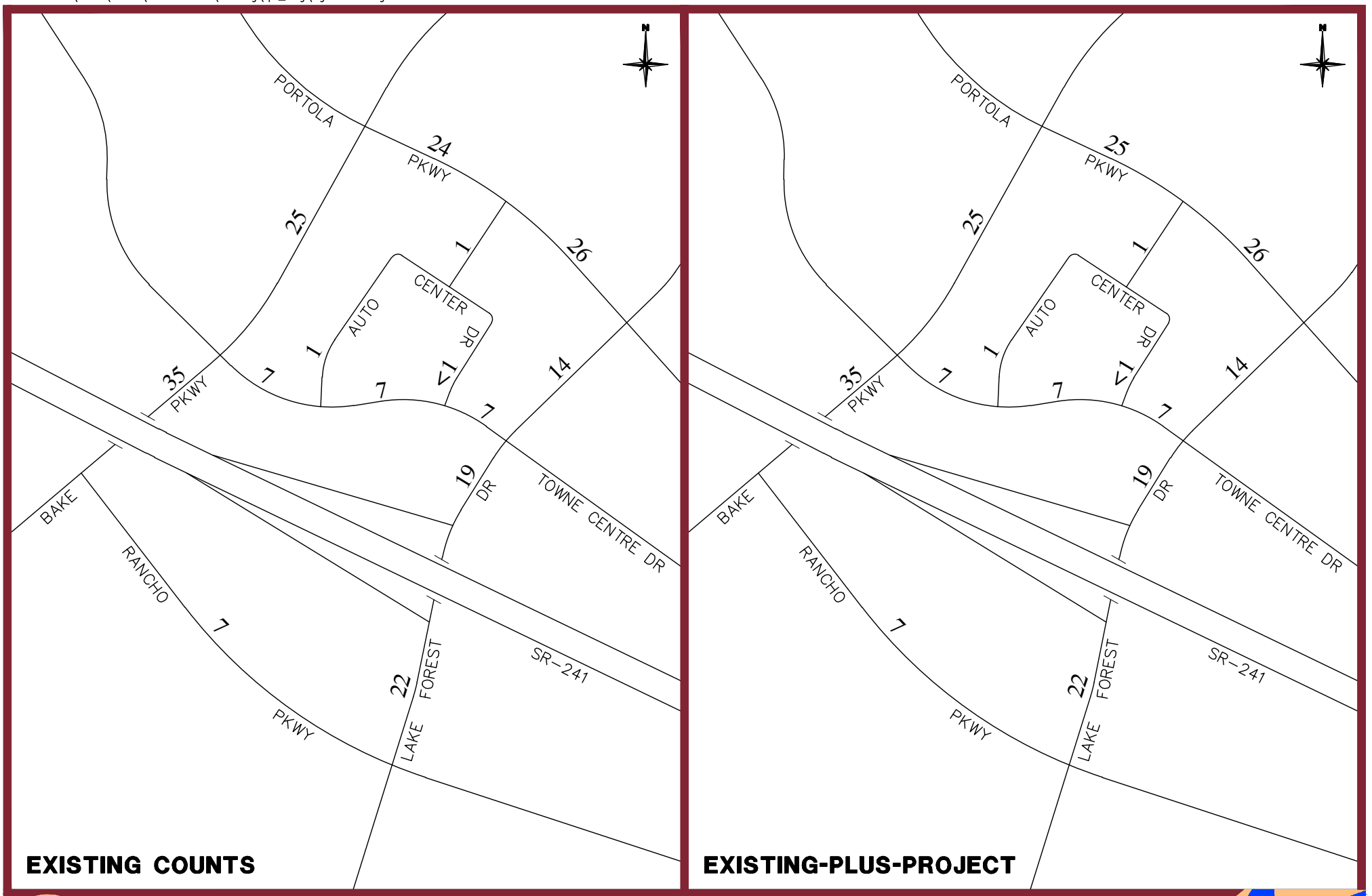

Existing ADT Volumes (000s)
- Counts and Existing-Plus-Project

Figure 3-2

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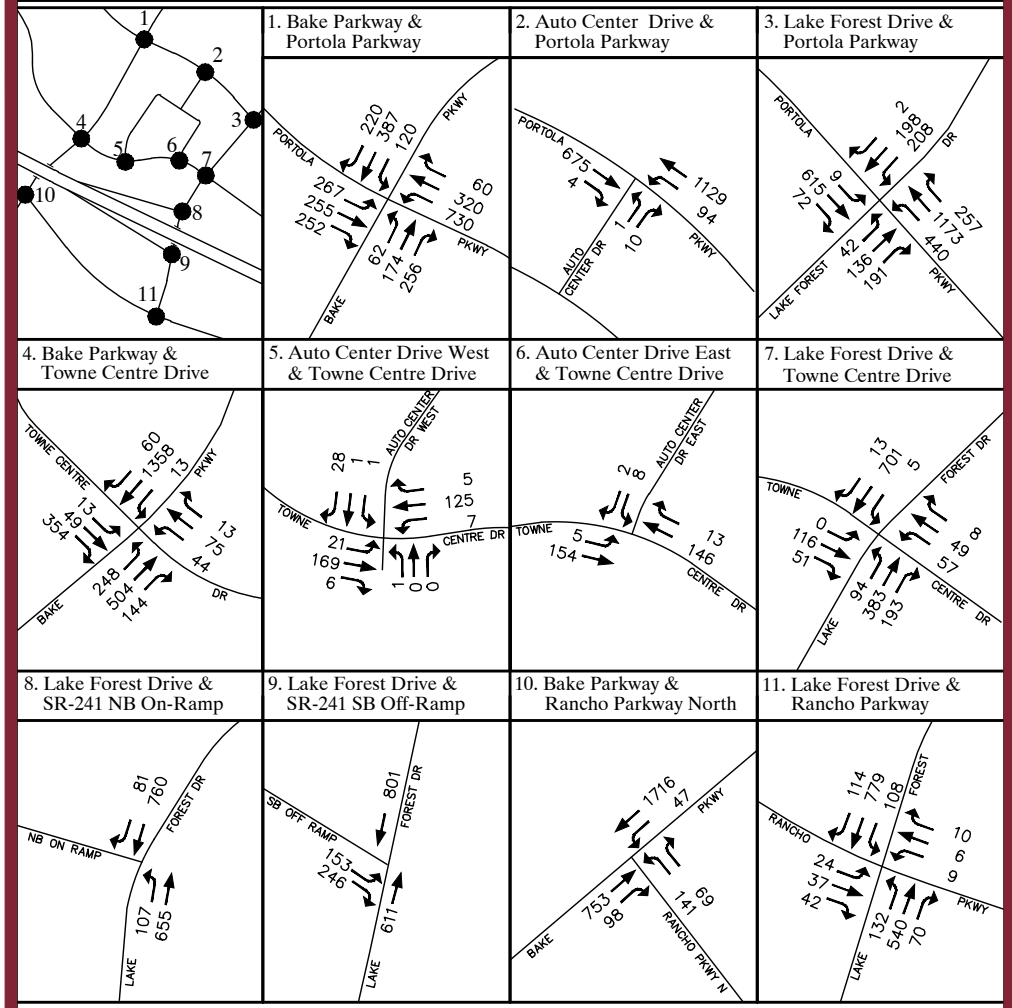
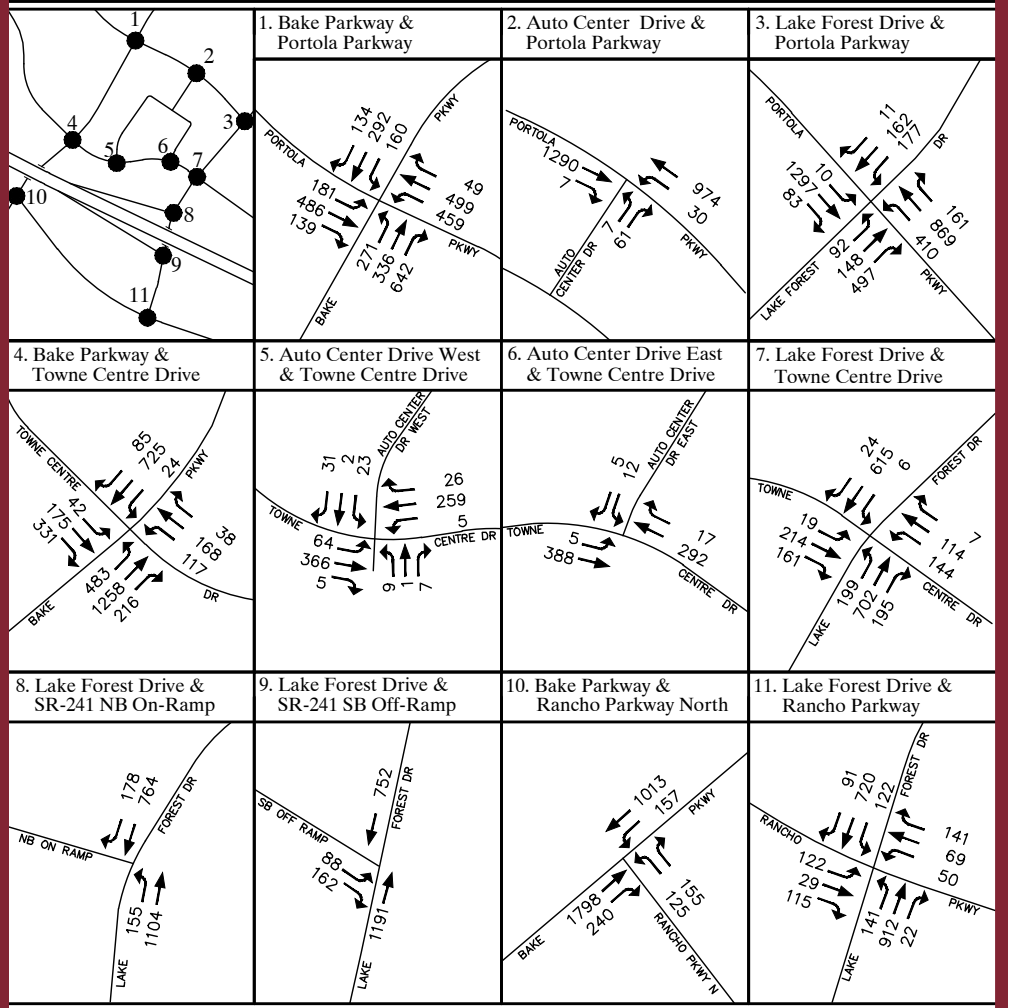
AM PEAK HOUR



PM PEAK HOUR



LEGEND

X — Intersection reference number

NOM — Nominal volume

Existing Peak Hour Volumes

Figure 3-3

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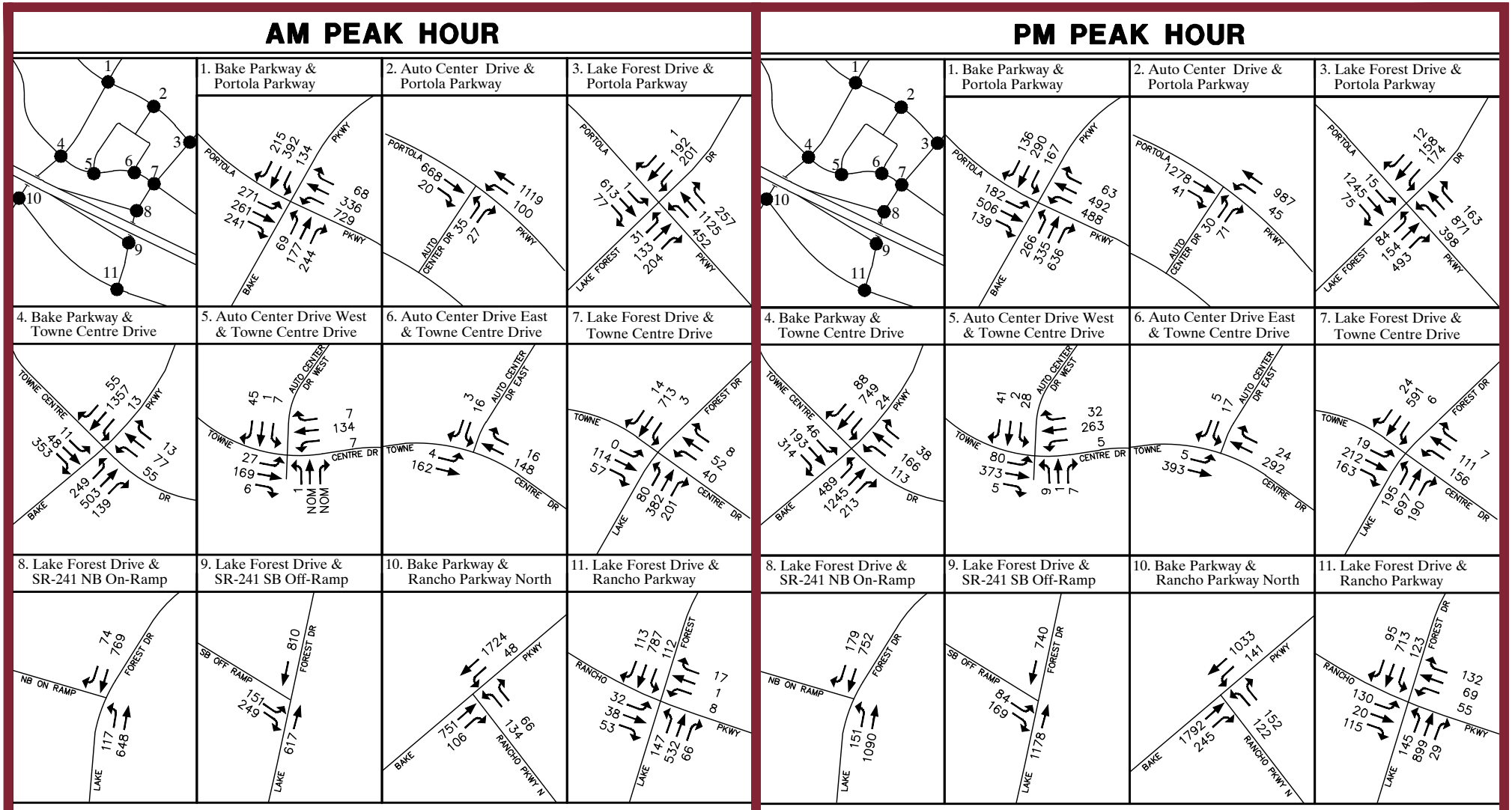

Existing-Plus-Project Peak Hour Volumes

Figure 3-4

data in combination with the existing lane configuration of each location. Existing and existing-plus-project AM and PM peak hour ICU values are summarized in Table 3-1 and illustrated in Figures 3-5 and 3-6 (ICU calculation worksheets are included in Appendix A). Use of the ICU methodology is consistent with the traffic analysis guidelines of the city of Lake Forest and the Orange County Transportation Authority (OCTA) Congestion Management Program (CMP), and by practice the ICU methodology assumes that intersections are signalized. Based on the intersection LOS performance criteria outlined in Chapter 1.0, all intersection locations analyzed in the study area currently operate at an acceptable LOS with no LOS worse than LOS "C."

3.1.3 Existing-Plus-Project Conditions

The existing intersection LOS summary previously presented in this chapter indicates that enough capacity is available to accommodate the proposed project with all intersections operating at LOS "D" or better in the study area. Therefore no project mitigation would be necessary.

3.2 Planned Circulation System

The circulation system that is planned in the traffic analysis study area under 2015 and 2030 conditions was previously illustrated in Figure 3-1. The existing circulation system in the study area previously illustrated in Figure 3-1 remains the same for years 2015 and 2030 except for the intersection of Lake Forest Drive and Rancho Parkway which assumes improvements according to the Lake Forest Transportation Mitigation (LFTM) Program. Outside the study area, only committed improvements (i.e., 100% funding source can be identified) are assumed in the year 2015 and year 2030. Alton Parkway is connected between Towne Centre Drive and Irvine Boulevard by year 2015. However, since it is not committed the Portola Parkway westerly extension to SR-241 from its current terminus just northwest of Alton Parkway is not assumed. However, as previously mentioned in this traffic study, the LFTM improvements are assumed in the long-range conditions as are the buildout of all OSA projects.

Table 3-1 Existing Intersection LOS Summary

Intersection	Existing				Existing-Plus-Project			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
1. Bake & Portola	.53	A	.56	A	.53	A	.55	A
2. Auto Center & Portola	.38	A	.35	A	.40	A	.36	A
3. Lake Forest & Portola	.46	A	.72	C	.46	A	.71	C
4. Bake & Towne Centre	.71	C	.60	A	.71	C	.61	B
5. Auto Center W & Towne Centre	.12	A	.20	A	.14	A	.20	A
6. Auto Center E & Towne Centre	.10	A	.17	A	.10	A	.17	A
7. Lake Forest & Towne Centre	.39	A	.50	A	.37	A	.49	A
8. Lake Forest & SR-241 NB On-Ramp	.30	A	.37	A	.31	A	.37	A
9. Lake Forest & SR-241 SB Off-Ramp	.43	A	.43	A	.44	A	.42	A
10. Bake & Rancho N	.59	A	.71	C	.60	A	.70	B
11. Lake Forest & Rancho	.39	A	.49	A	.39	A	.49	A

Abbreviations: ICU – intersection capacity utilization
E,W,N – east, west, north
LOS – level of service
NB,SB – northbound, southbound

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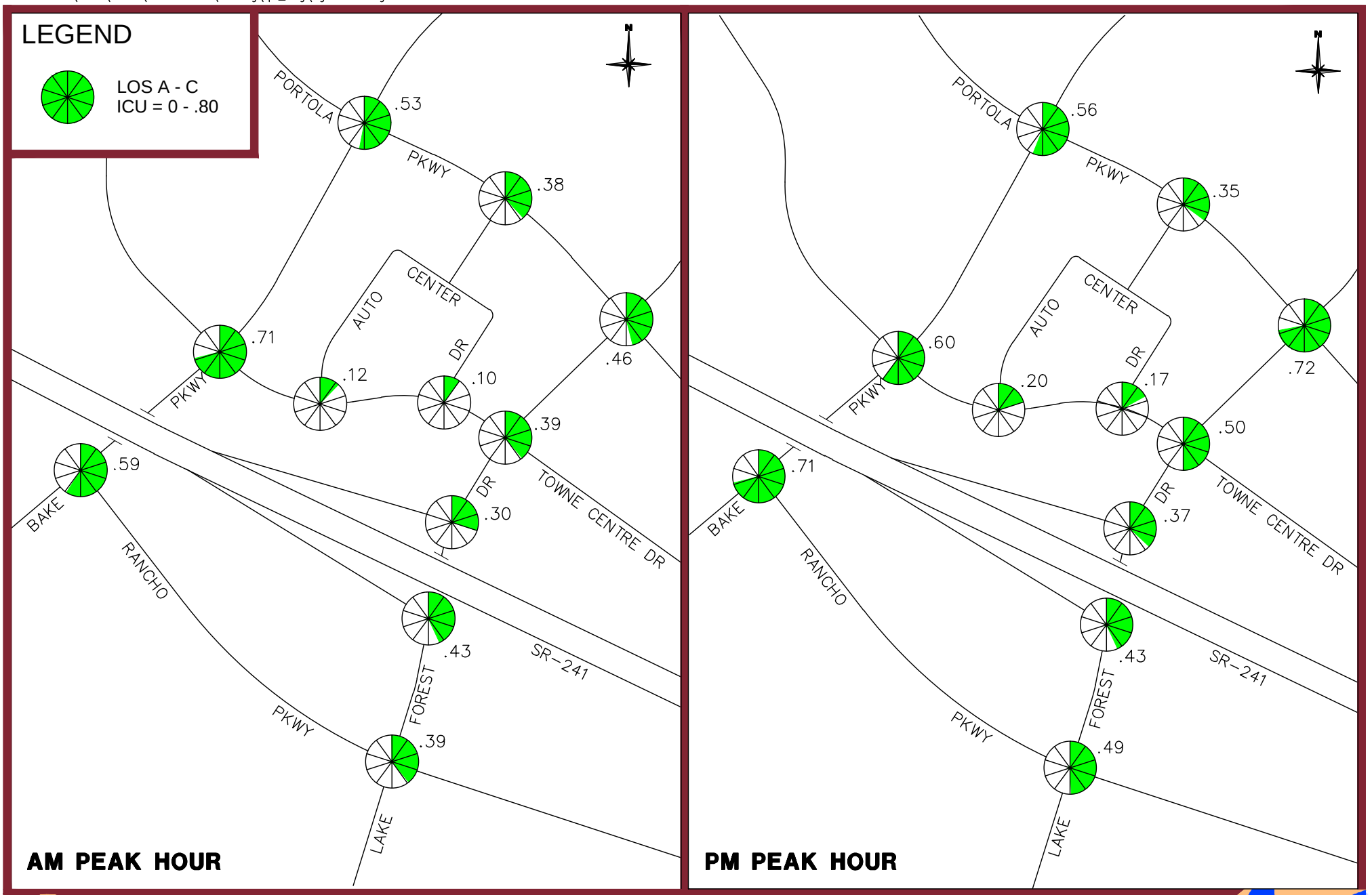

Peak Hour Level of Service (LOS) - Existing

Figure 3-5

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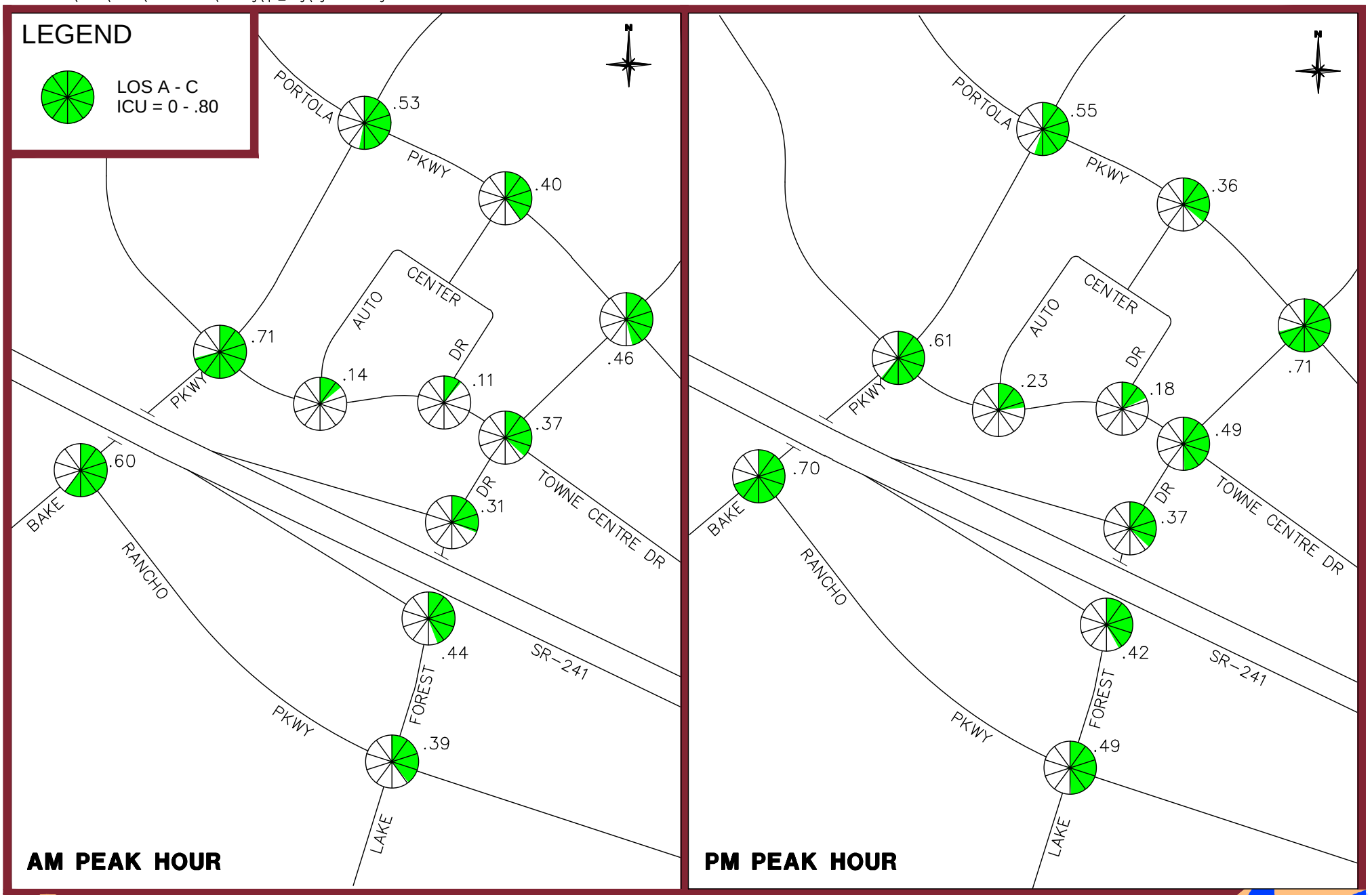

Peak Hour Level of Service (LOS)
- Existing-Plus-Project

Figure 3-6

4.0 Year 2015 Project Impact Analysis

This chapter analyzes the impacts of the proposed project on year 2015 traffic conditions in the traffic analysis study area. The potential traffic impacts of the project are assessed based on a comparison of 2015 no-project and with-project conditions.

4.1 Year 2015 Traffic Impacts

As discussed in Chapter 1.0, the Lake Forest Traffic Analysis Model (LFTAM) recently used for the Shea/Baker project was used to prepare the year 2015 no-project and with-project traffic forecasts that are applied in the analysis.

The following sub-sections summarize the resulting 2015 no-project and with-project traffic conditions for arterial roads and intersections.

4.1.1 Average Daily Traffic Volumes

Year 2015 no-project and with-project average daily traffic (ADT) volumes are illustrated in Figure 4-1. Because the project replaces existing use resulting in a nominal difference in daily trips, there are negligible changes in ADT. The only measurable change with the project can be seen on Towne Centre Drive east of Bake Parkway where the ADT increases from 8,000 to 9,000. It should be noted that Alton Parkway is connected between Towne Centre Drive and Irvine Boulevard by year 2015. The Alton Parkway extension alleviates traffic along Bake Parkway and, to a lesser degree, Lake Forest Drive by providing additional parallel capacity for traffic to travel resulting in lower volumes than existing conditions along these two roadways.

4.1.2 Peak Hour Intersection Levels of Service

Figures 4-2 and 4-3 illustrate the year 2015 no-project and with-project AM and PM peak hour volumes at the intersections analyzed in the study area. The resulting intersection capacity utilization (ICU) values are illustrated in Figures 4-4 and 4-5 and summarized in Table 4-1 (ICU calculation worksheets are included in Appendix A). Based on the intersection LOS performance criteria and impact thresholds outlined in Chapter 1.0, no intersection location analyzed in the study areas is adversely impacted by the proposed project in the year 2015 ICU analysis (i.e., all intersections with the project are forecast to operate at level of service "D" (LOS D) or better).

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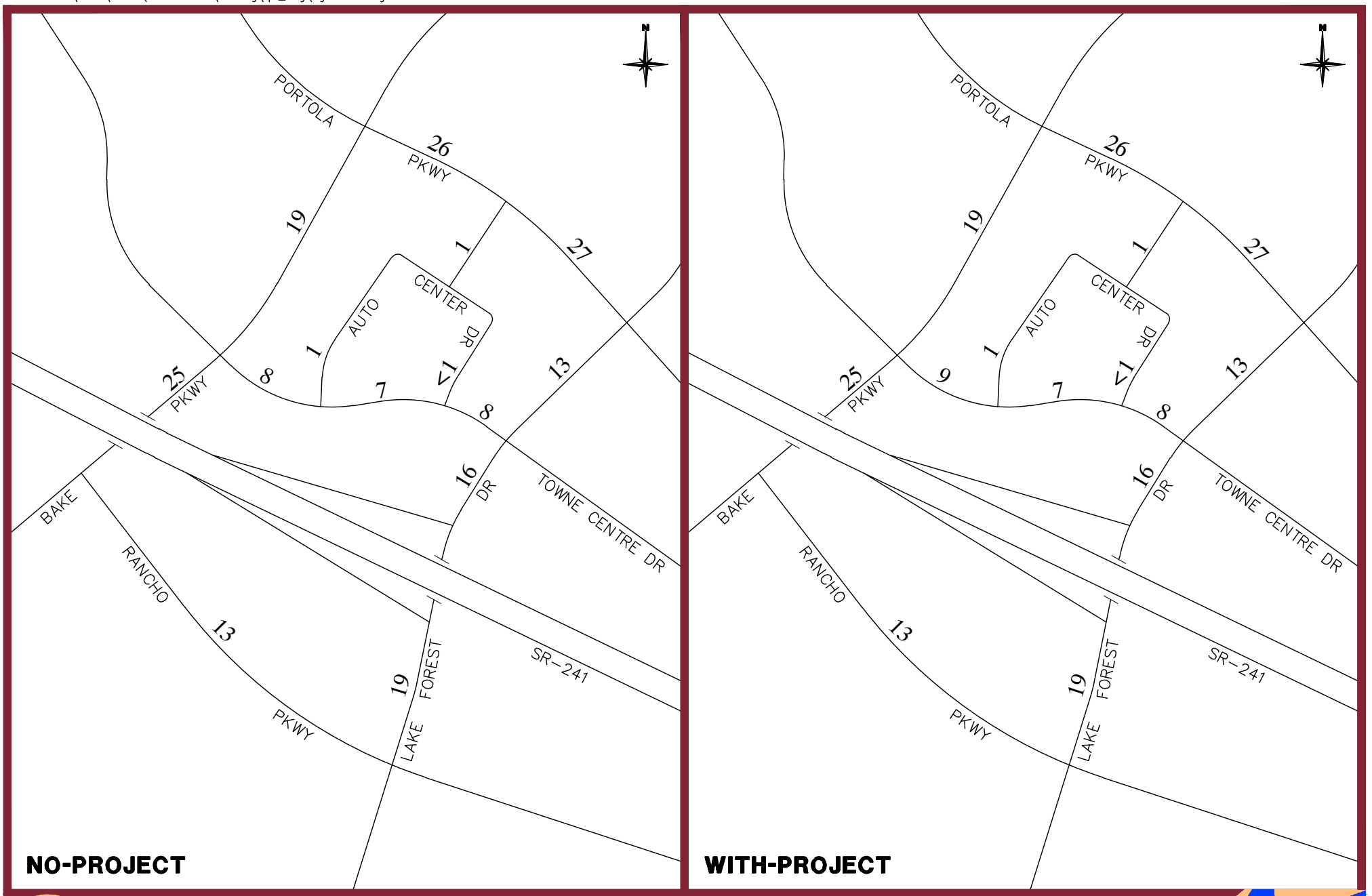

2015 ADT Volumes (000s)
- No-Project and With-Project

Figure 4-1

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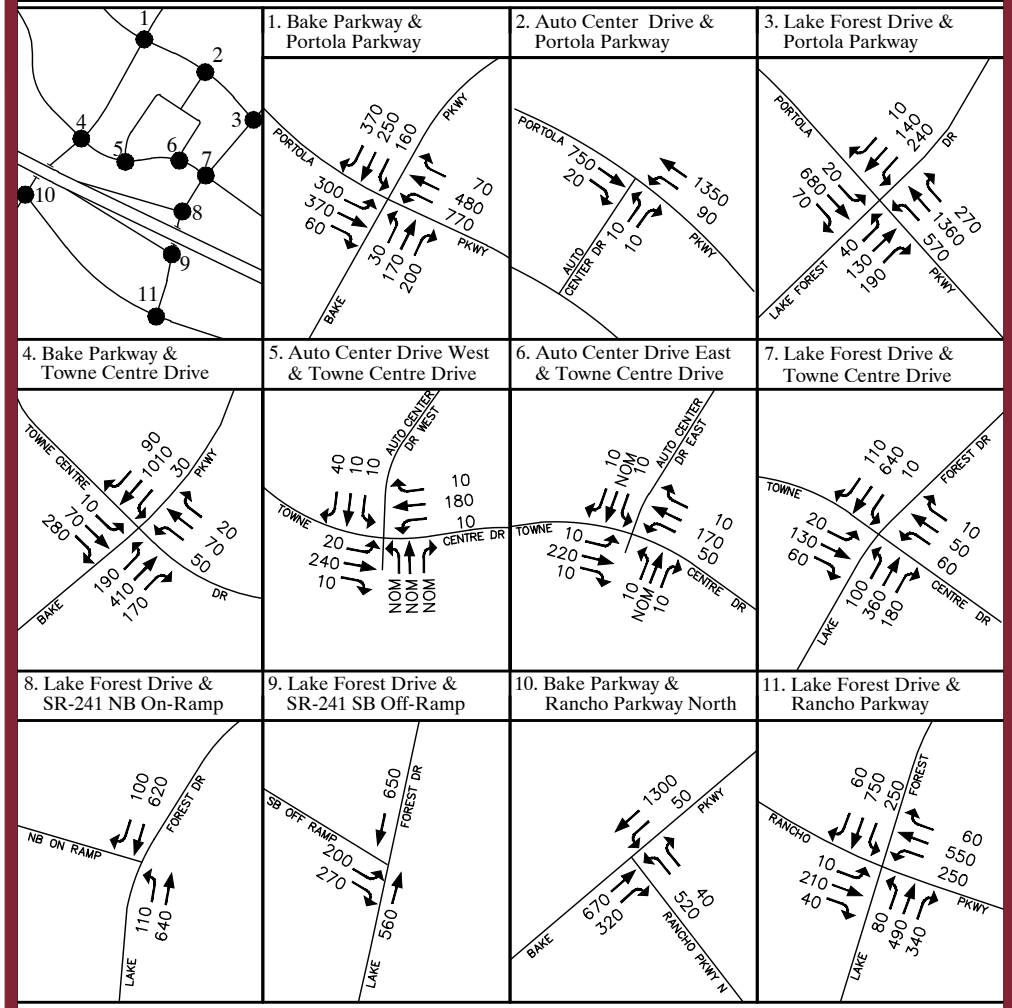
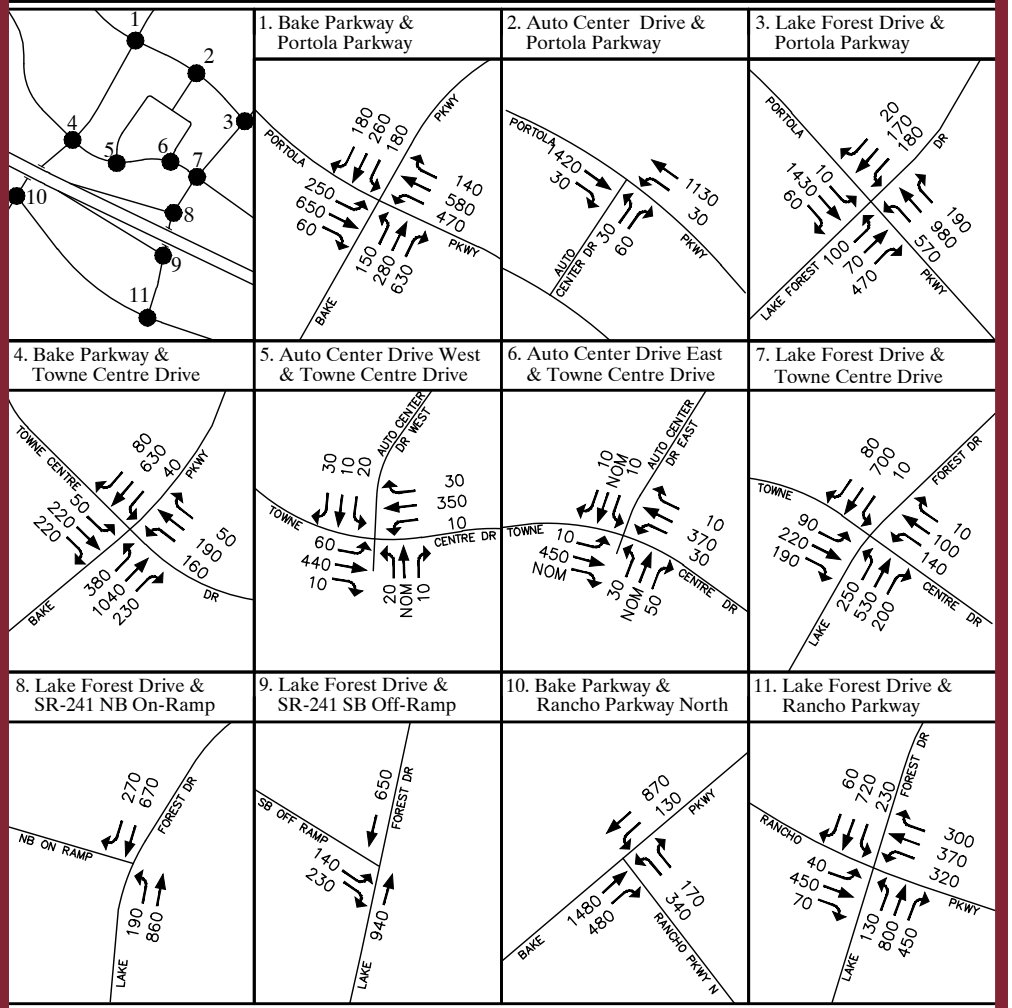
AM PEAK HOUR



PM PEAK HOUR



LEGEND

X — Intersection reference number

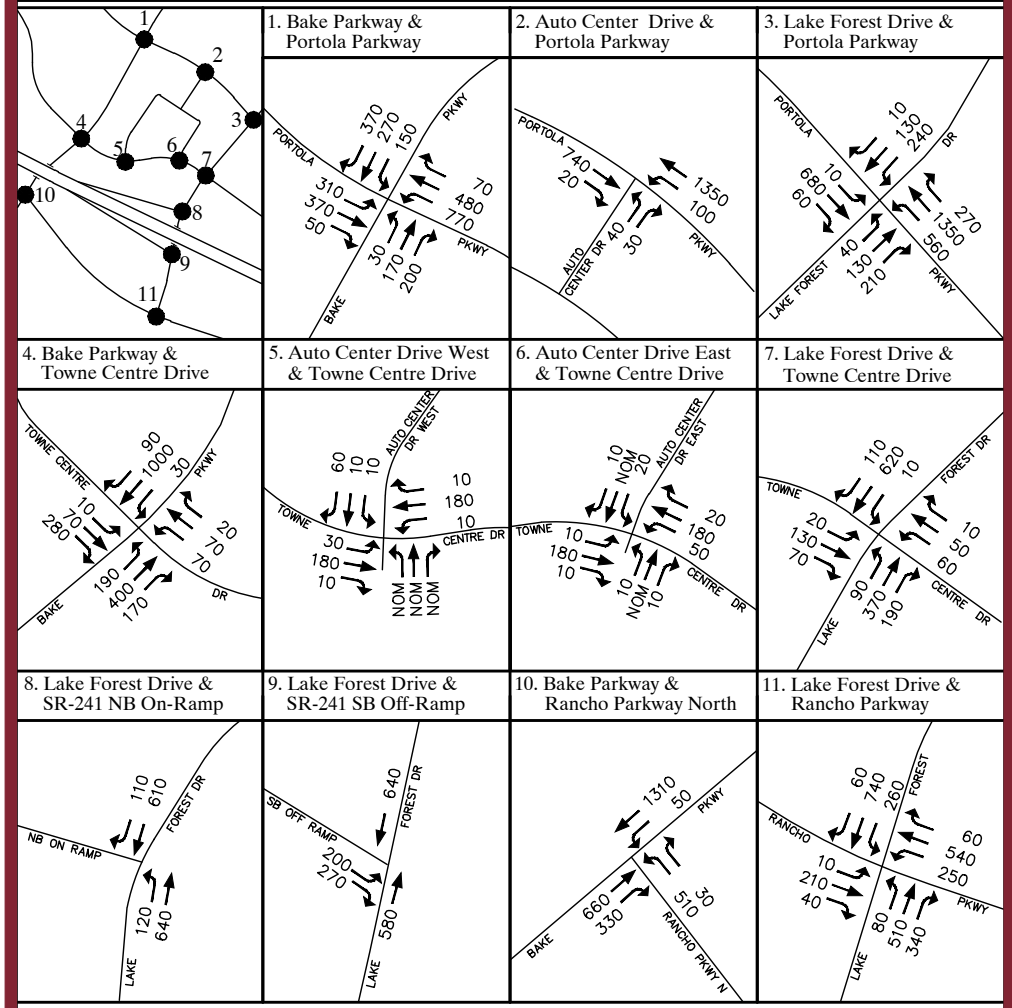
NOM — Nominal volume

2015 Peak Hour Volumes - No-Project

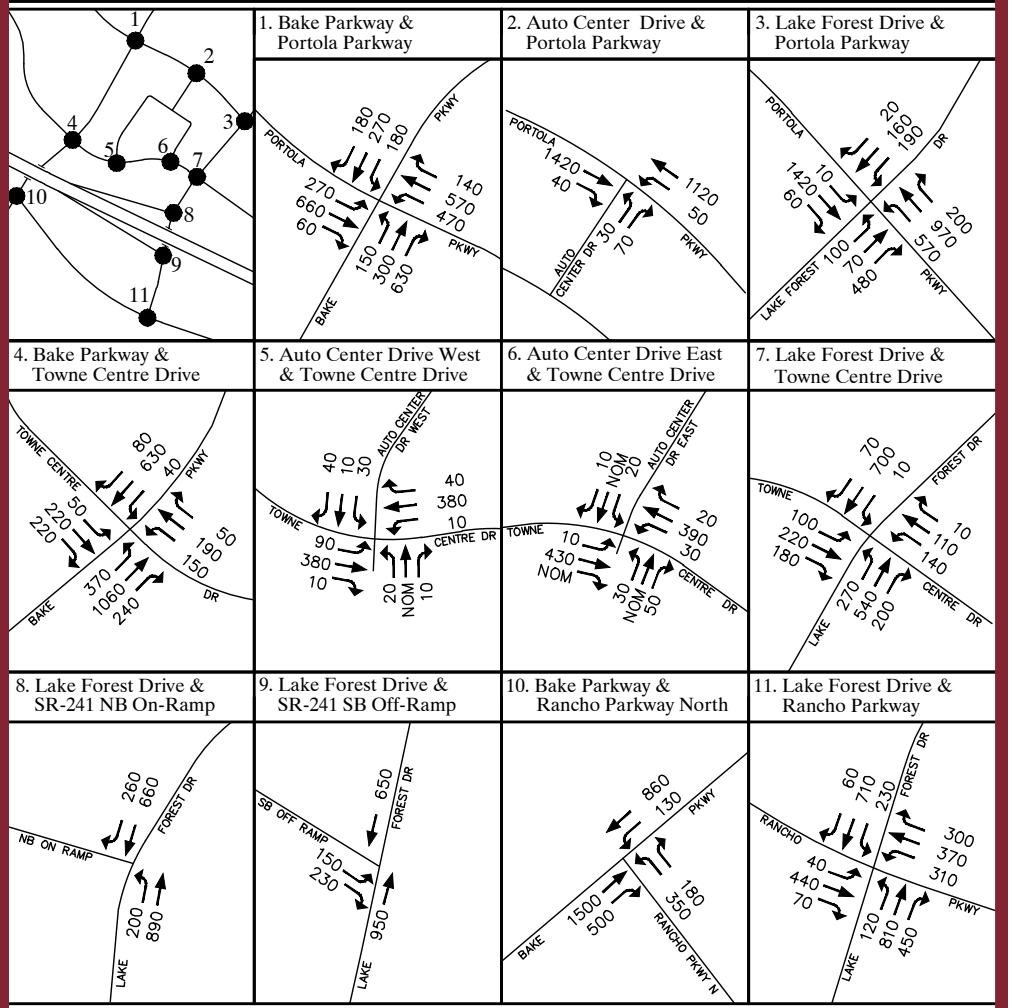
Figure 4-2

DRAWING: v:\2073\active\2073006460\drawing\rpt_dwg\figure4-3.dwg

AM PEAK HOUR



PM PEAK HOUR



LEGEND

X — Intersection reference number

NOM — Nominal volume

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2015 Peak Hour Volumes - With-Project

Figure 4-3

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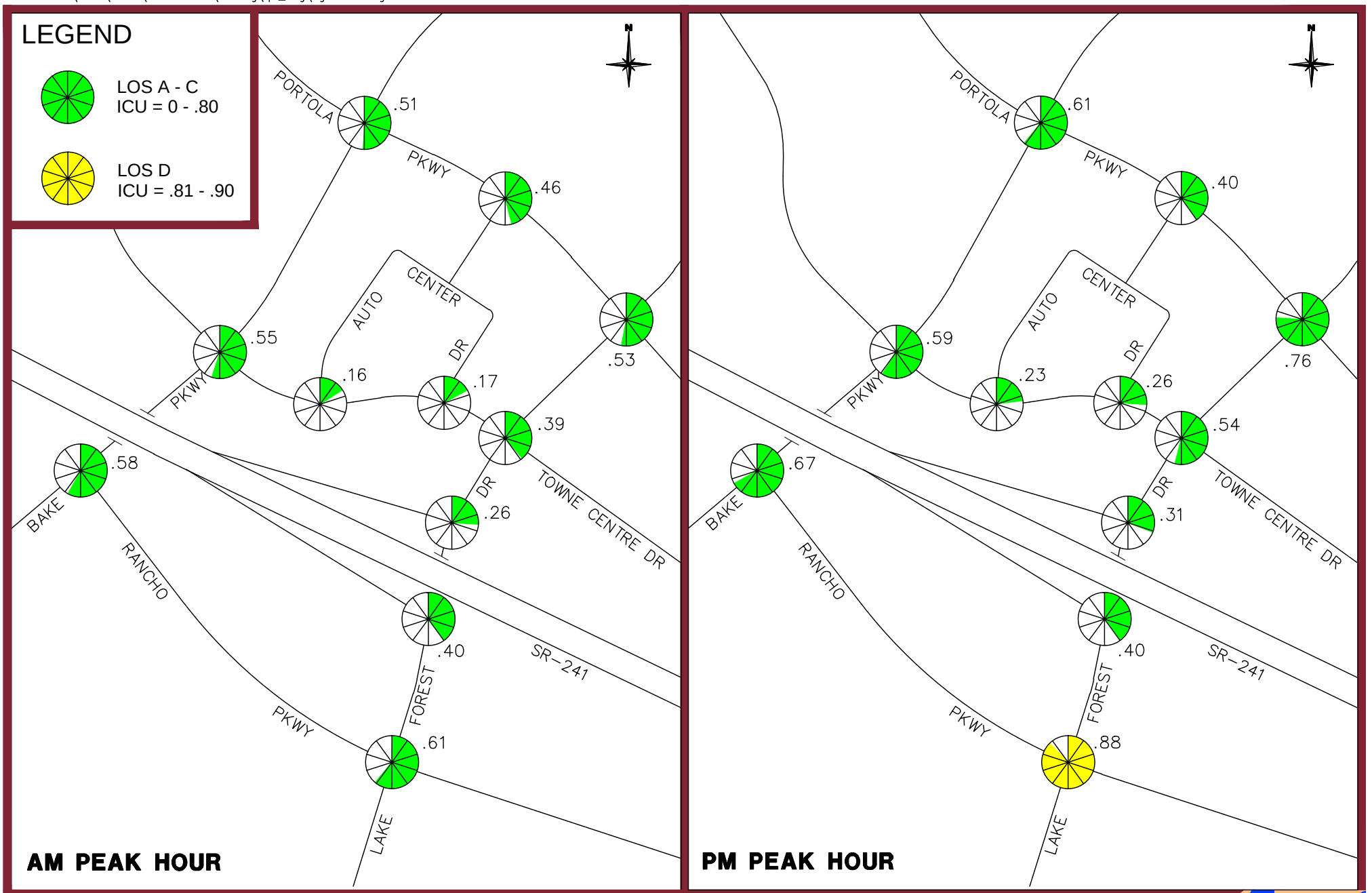

2015 Peak Hour Level of Service (LOS)
- No-Project

Figure 4-4

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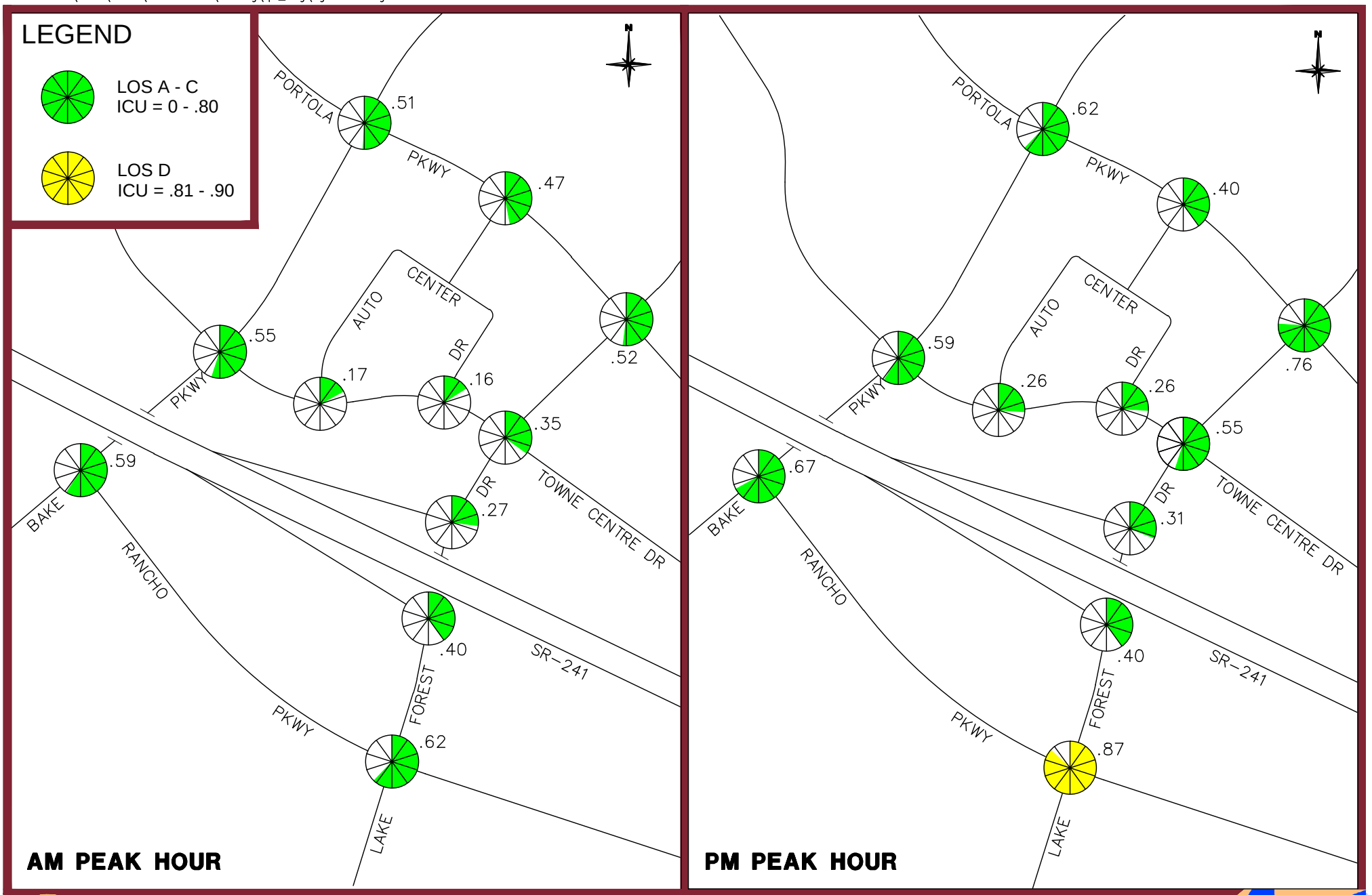

Stantec

2015 Peak Hour Level of Service (LOS)
- With-Project

Figure 4-5

Table 4-1 2015 Intersection LOS Summary

Intersection	No-Project				With-Project			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
1. Bake & Portola	.51	A	.61	B	.51	A	.62	B
2. Auto Center & Portola	.46	A	.40	A	.46	A	.40	A
3. Lake Forest & Portola	.53	A	.76	C	.52	A	.76	C
4. Bake & Towne Centre	.55	A	.59	A	.55	A	.59	A
5. Auto Center W & Towne Centre	.22	A	.30	A	.24	A	.29	A
6. Auto Center E & Towne Centre	.36	A	.47	A	.35	A	.48	A
7. Lake Forest & Towne Centre	.26	A	.31	A	.27	A	.31	A
8. Lake Forest & SR-241 NB On-Ramp	.40	A	.40	A	.40	A	.40	A
9. Lake Forest & SR-241 SB Off-Ramp	.58	A	.67	B	.59	A	.67	B
10. Bake & Rancho N	.61	B	.88	D	.62	B	.87	D
11. Lake Forest & Rancho	.61	B	.88	D	.62	B	.87	D

Abbreviations: ICU – intersection capacity utilization
E,W,N – east, west, north
LOS – level of service
NB,SB – northbound, southbound

5.0 Year 2030 Project Impact Analysis

This chapter analyzes the impacts of the proposed project on year 2030 traffic conditions in the traffic analysis study area. The potential traffic impacts of the project are assessed based on a comparison of 2030 no-project and with-project conditions.

5.1 Year 2030 Traffic Impacts

As discussed in Chapter 1.0, the Lake Forest Traffic Analysis Model (LFTAM) recently used for the Shea/Baker project was used to prepare the year 2030 no-project and with-project traffic forecasts that are applied in the analysis.

The following sub-sections summarize the resulting 2030 no-project and with-project traffic conditions for arterial roads and intersections.

5.1.1 Average Daily Traffic Volumes

Year 2030 no-project and with-project average daily traffic (ADT) volumes are illustrated in Figure 5-1. Similarly shown in Chapter 4.0 for year 2015, there are negligible changes in ADT because the project replaces existing use resulting in a nominal difference in daily trips. Again the only measurable change with the project can be seen on Towne Centre Drive east of Bake Parkway where the ADT increases from 8,000 to 9,000.

5.1.2 Peak Hour Intersection Levels of Service

Figures 5-2 and 5-3 illustrate the year 2030 no-project and with-project AM and PM peak hour volumes at the intersections analyzed in the study area. The resulting intersection capacity utilization (ICU) values are illustrated in Figures 5-4 and 5-5 and summarized in Table 5-1 (ICU calculation worksheets are included in Appendix A). Based on the intersection LOS performance criteria and impact thresholds outlined in Chapter 1.0, no intersection location analyzed in the study areas is adversely impacted by the proposed project in the year 2030 ICU analysis (i.e., all intersections with the project are forecast to operate at level of service "D" (LOS D) or better).

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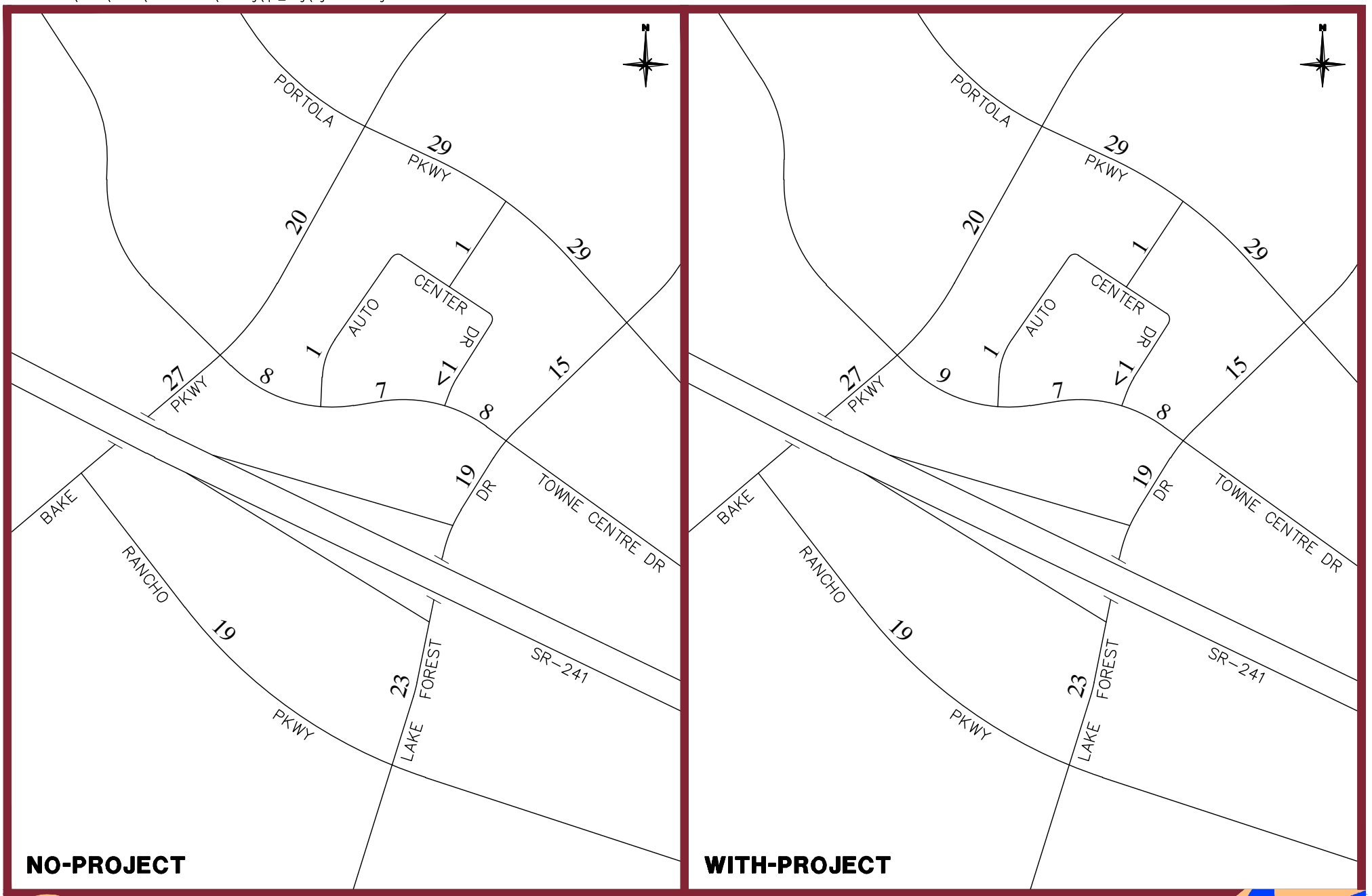

2030 ADT Volumes (000s)
- No-Project and With-Project

Figure 5-1

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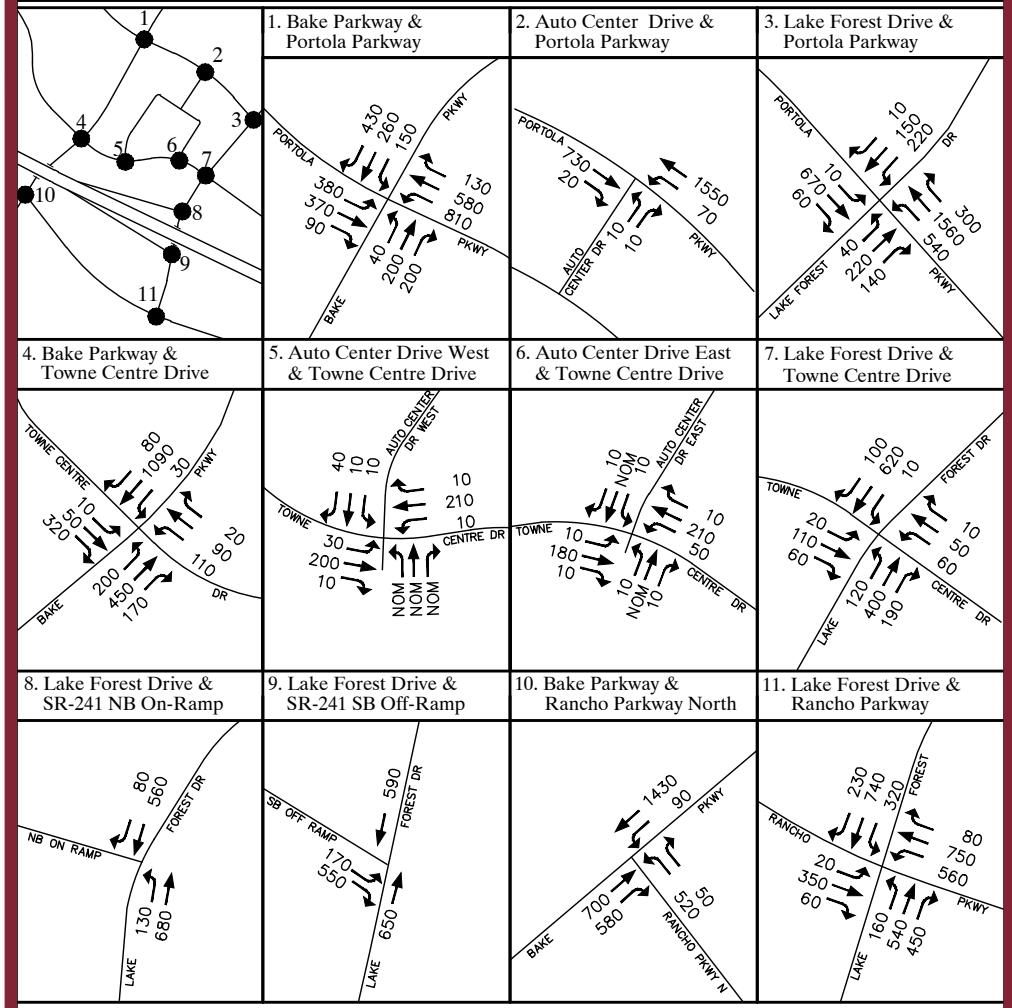
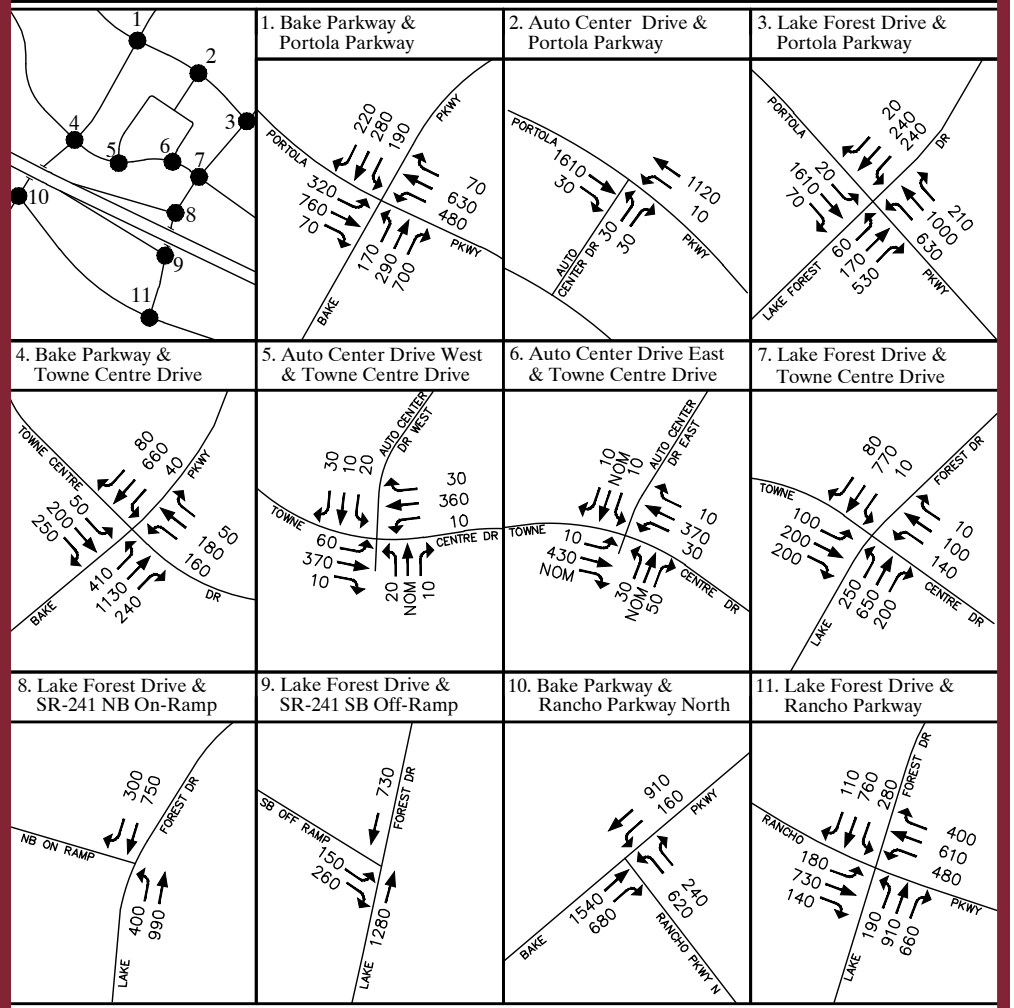
AM PEAK HOUR



PM PEAK HOUR



LEGEND

X — Intersection reference number

NOM — Nominal volume

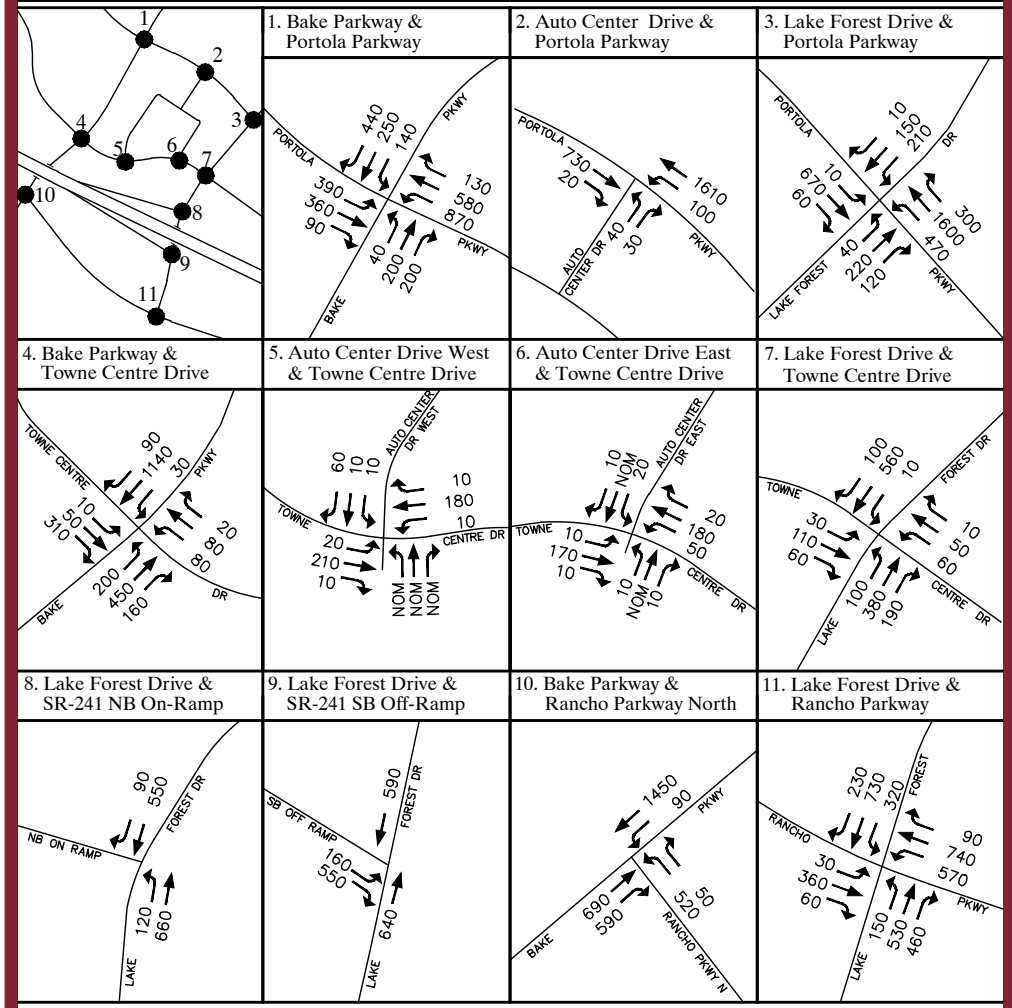
2030 Peak Hour Volumes
- No-Project

Figure 5-2

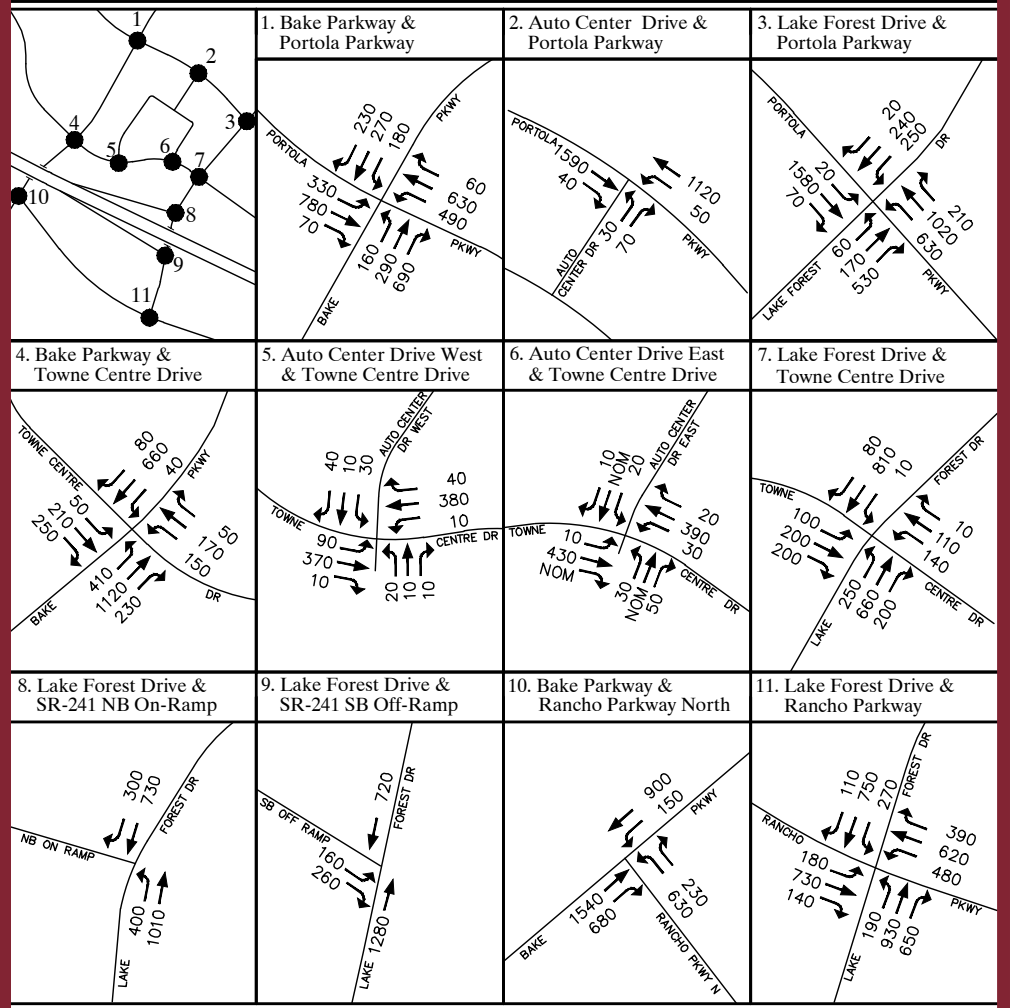
Stantec

DRAWING: v:\2073\active\2073006460\drawing\rpt_dwg\figure5-3.dwg

AM PEAK HOUR



PM PEAK HOUR



LEGEND

X — Intersection reference number

NOM — Nominal volume

Stantec

2030 Peak Hour Volumes - With-Project

Figure 5-3

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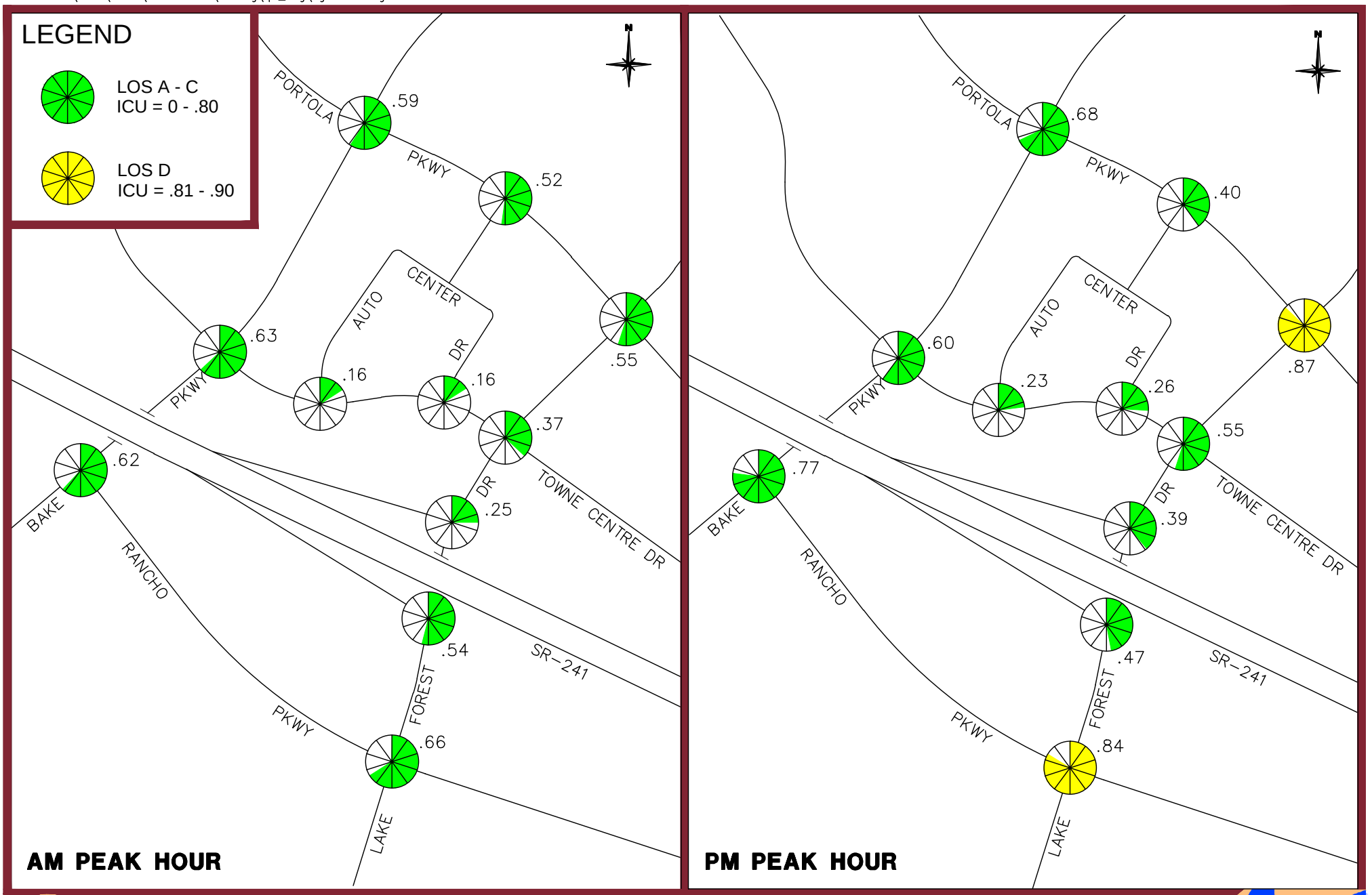

2030 Peak Hour Level of Service (LOS) - No-Project

Figure 5-4

Stantec

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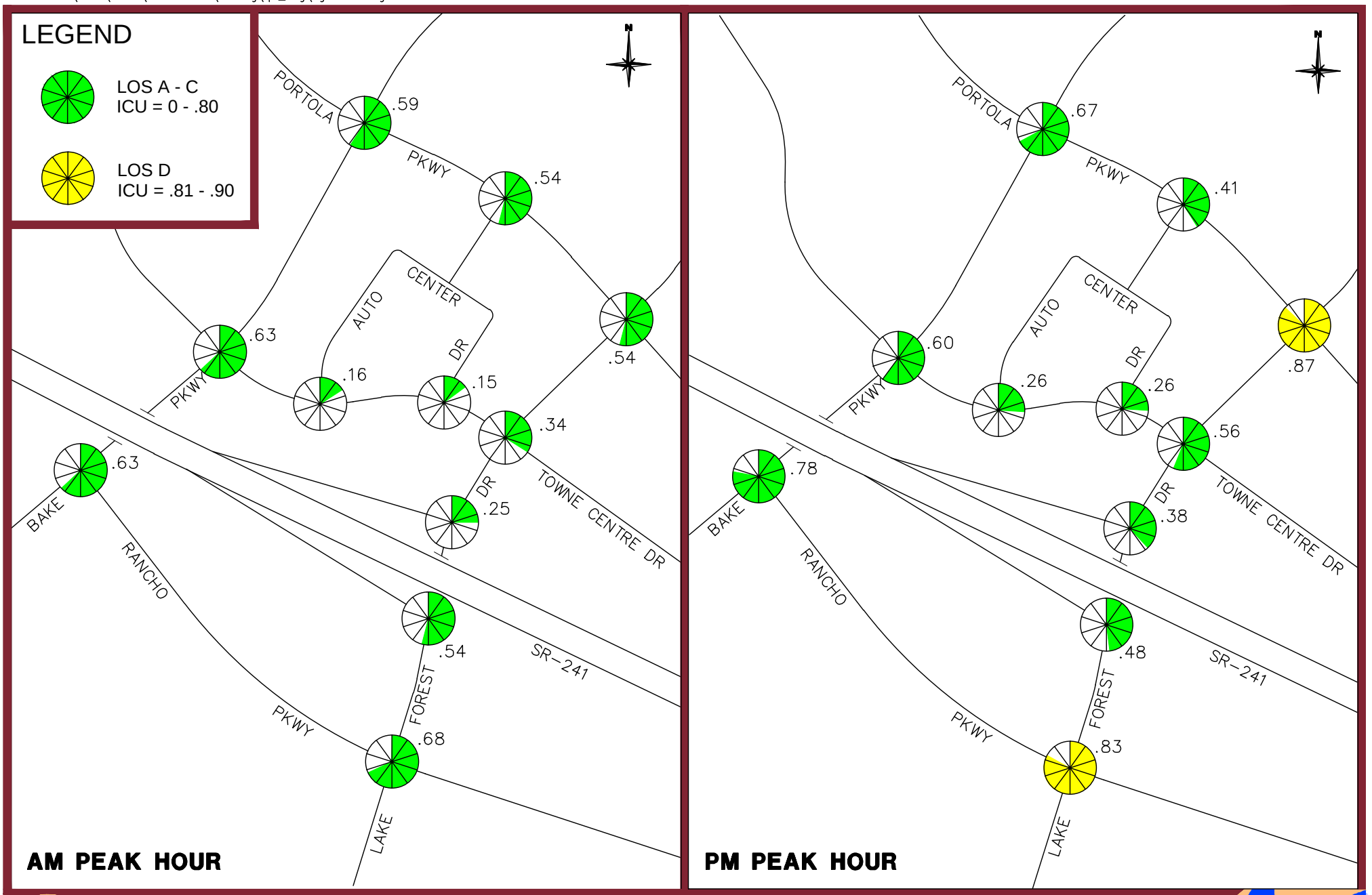


2030 Peak Hour Level of Service (LOS) - With-Project

Figure 5-5

Stantec

Table 5-1 2030 Intersection LOS Summary

Intersection	No-Project				With-Project			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
1. Bake & Portola	.59	A	.68	B	.59	A	.67	B
2. Auto Center & Portola	.52	A	.40	A	.53	A	.39	A
3. Lake Forest & Portola	.55	A	.87	D	.54	A	.87	D
4. Bake & Towne Centre	.63	B	.60	A	.63	B	.60	A
5. Auto Center W & Towne Centre	.22	A	.30	A	.23	A	.30	A
6. Auto Center E & Towne Centre	.32	A	.49	A	.31	A	.49	A
7. Lake Forest & Towne Centre	.25	A	.39	A	.25	A	.38	A
8. Lake Forest & SR-241 NB On-Ramp	.54	A	.47	A	.54	A	.48	A
9. Lake Forest & SR-241 SB Off-Ramp	.62	B	.77	C	.63	B	.78	C
10. Bake & Rancho N	.66	B	.84	D	.68	B	.83	D
11. Lake Forest & Rancho	.66	B	.84	D	.68	B	.83	D

Abbreviations: ICU – intersection capacity utilization
E,W,N – east, west, north
LOS – level of service
NB,SB – northbound, southbound

6.0 Conclusions

The traffic impacts of the proposed residential project in the Foothill Ranch Towne Centre area in the city of Lake Forest in Orange County, California were identified by analyzing the traffic conditions for the study area circulation system based on three time frames: existing, 2015 and 2030 future traffic conditions. In each case, traffic conditions under no-project and with-project were compared to identify the potential traffic impacts of the project. The project site remains as existing (i.e., auto dealer use) under future (2015 and 2030) no-project conditions, and the proposed project change to residential is assumed to be fully developed under existing-plus-project and future year 2015 and 2030 with-project conditions.

The two future settings (2015 and 2030) are based on the existing circulation system plus improvements that are planned to be in place in each future time frame and the land use and development growth that is projected in each future time frame.

The circulation system performance criteria applied in the analysis are based on level of service (LOS) calculation methodologies and performance standards for intersections that have been used by previous reports in the city of Lake Forest including the Vacant Land Opportunities Study Area.

The results of the existing, year 2015 and year 2030 project impact analysis, which are summarized in detail in Chapters 3.0 through 5.0 of this report, indicate that the proposed project is not forecast to significantly impact any intersections in the study area. Therefore no project mitigation measures are required The intersection LOS summaries presented in each chapter indicated that enough capacity is available to accommodate the proposed project with all intersections operating at LOS "D" or better in the study area.

Appendix A

Intersection Capacity Utilization (ICU) Worksheets

Appendix A Intersection Capacity Utilization (ICU) Worksheets

This appendix summarizes information pertaining to the intersection analysis portion of the traffic study for the proposed project. Intersection location reference map is provided in Figure A-1 for the project study area. The AM and PM peak hour intersection capacity utilization (ICU) worksheets for existing and future traffic analysis scenarios analyzed in the study area are presented in the following order by intersection:

ICU Data Scenarios

1. Existing Counts
2. Existing-Plus-Project
3. 2015 No-Project
4. 2015 With-Project
5. 2030 No-Project
6. 2030 With-Project

ICU Calculation Methodology

The ICU calculation procedure is based on a critical movement methodology that shows the amount of capacity utilized by each critical movement at an intersection. A capacity of 1,700 vehicles per hour per lane is assumed together with a .05 clearance interval. A "de facto" right-turn lane is used in the ICU calculation for cases where a curb lane is wide enough to separately serve both through and right-turn traffic (typically with a width of 19 feet or more from curb to outside of through-lane with parking prohibited during peak periods). Such lanes are treated the same as striped right-turn lanes during the ICU calculations, but they are denoted on the ICU calculation worksheets using the letter "d" in place of a numerical entry for right-turn lanes.

The methodology also incorporates a check for right-turn capacity utilization. Both right-turn-on-green (RTOG) and right-turn-on-red (RTOR) capacity availability are calculated and checked against the total right-turn capacity need. If insufficient capacity is available, then an adjustment is made to the total capacity utilization value. The following example shows how this adjustment is made.

Example for Northbound Right

1. Right-Turn-On-Green (RTOG)

If NBT is critical move, then:
RTOG = V/C (NBT)
Otherwise,
RTOG = V/C (NBL) + V/C (SBT) - V/C (SBL)

2. Right-Turn-On-Red (RTOR)

If WBL is critical move, then:
RTOR = V/C (WBL)
Otherwise,
RTOR = V/C (EBL) + V/C (WBT) - V/C (EBT)

3. Right-Turn Overlap Adjustment

If the northbound right is assumed to overlap with the adjacent westbound left, adjustments to the RTOG and RTOR values are made as follows:

RTOG = RTOG + V/C (WBL)
RTOR = RTOR - V/C (WBL)

4. Total Right-Turn Capacity (RTC) Availability For NBR

RTC = RTOG + factor x RTOR
Where factor = RTOR saturation flow factor (75%)

Right-turn adjustment is then as follows: Additional ICU = V/C (NBR) – RTC

A zero or negative value indicates that adequate capacity is available and no adjustment is necessary. A positive value indicates that the available RTOR and RTOG capacity does not adequately accommodate the right-turn V/C, therefore the right-turn is essentially considered to be a critical movement. In such cases, the right-turn adjustment is noted on the ICU worksheet and it is included in the total capacity utilization value. When it is determined that a right-turn adjustment is required for more than one right-turn movement, the word "multi" is printed on the worksheet instead of an actual right-turn movement reference, and the right-turn adjustments are cumulatively added to the total capacity utilization value. In such cases, further operational evaluation is typically carried out to determine if under actual operational conditions, the critical right-turns would operate simultaneously, and therefore a right-turn adjustment credit should be applied.

Shared Lane V/C Methodology

For intersection approaches where shared usage of a lane is permitted by more than one turn movement (e.g., left/through, through/right, left/through/right), the individual turn volumes are evaluated to determine whether dedication of the shared lane is warranted to any one given turn movement. The following example demonstrates how this evaluation is carried out:

Example for Shared Left/Through Lane

1. Average Lane Volume (ALV)

$$ALV = \frac{\text{Left-Turn Volume + Through Volume}}{\text{Total Left + Through Approach Lanes (including shared lane)}}$$

2. ALV for Each Approach

$$ALV\ (Left) = \frac{\text{Left-Turn Volume}}{\text{Left Approach Lanes (including shared lane)}}$$

$$ALV\ (Through) = \frac{\text{Through Volume}}{\text{Through Approach Lanes (including shared lane)}}$$

3. Lane Dedication is Warranted

If ALV (Left) is greater than ALV then full dedication of the shared lane to the left-turn approach is warranted. Left-turn and through V/C ratios for this case are calculated as follows:

$$V/C\ (Left) = \frac{\text{Left-Turn Volume}}{\text{Left Approach Capacity (including shared lane)}}$$

$$V/C\ (Through) = \frac{\text{Through Volume}}{\text{Through Approach Capacity (excluding shared lane)}}$$

Similarly, if ALV (Through) is greater than ALV then full dedication to the through approach is warranted, and left-turn and through V/C ratios are calculated as follows:

$$V/C\ (Left) = \frac{\text{Left-Turn Volume}}{\text{Left Approach Capacity (excluding shared lane)}}$$

$$V/C\ (Through) = \frac{\text{Through Volume}}{\text{Through Approach Capacity (including shared lane)}}$$

4. Lane Dedication is not Warranted

If ALV (Left) and ALV (Through) are both less than ALV, the left/through lane is assumed to be truly shared and each left, left/through or through approach lane carries an evenly distributed volume of traffic equal to ALV. A combined left/through V/C ratio is calculated as follows:

$$\text{V/C (Left/Through)} = \frac{\text{Left-Turn Volume + Through Volume}}{\text{Total Left + Through Approach Capacity (including shared lane)}}$$

This V/C (Left/Through) ratio is assigned as the V/C (Through) ratio for the critical movement analysis and ICU summary listing.

If split phasing has not been designated for this approach, the relative proportion of V/C (Through) that is attributed to the left-turn volume is estimated as follows:

If approach has more than one left-turn (including shared lane), then:

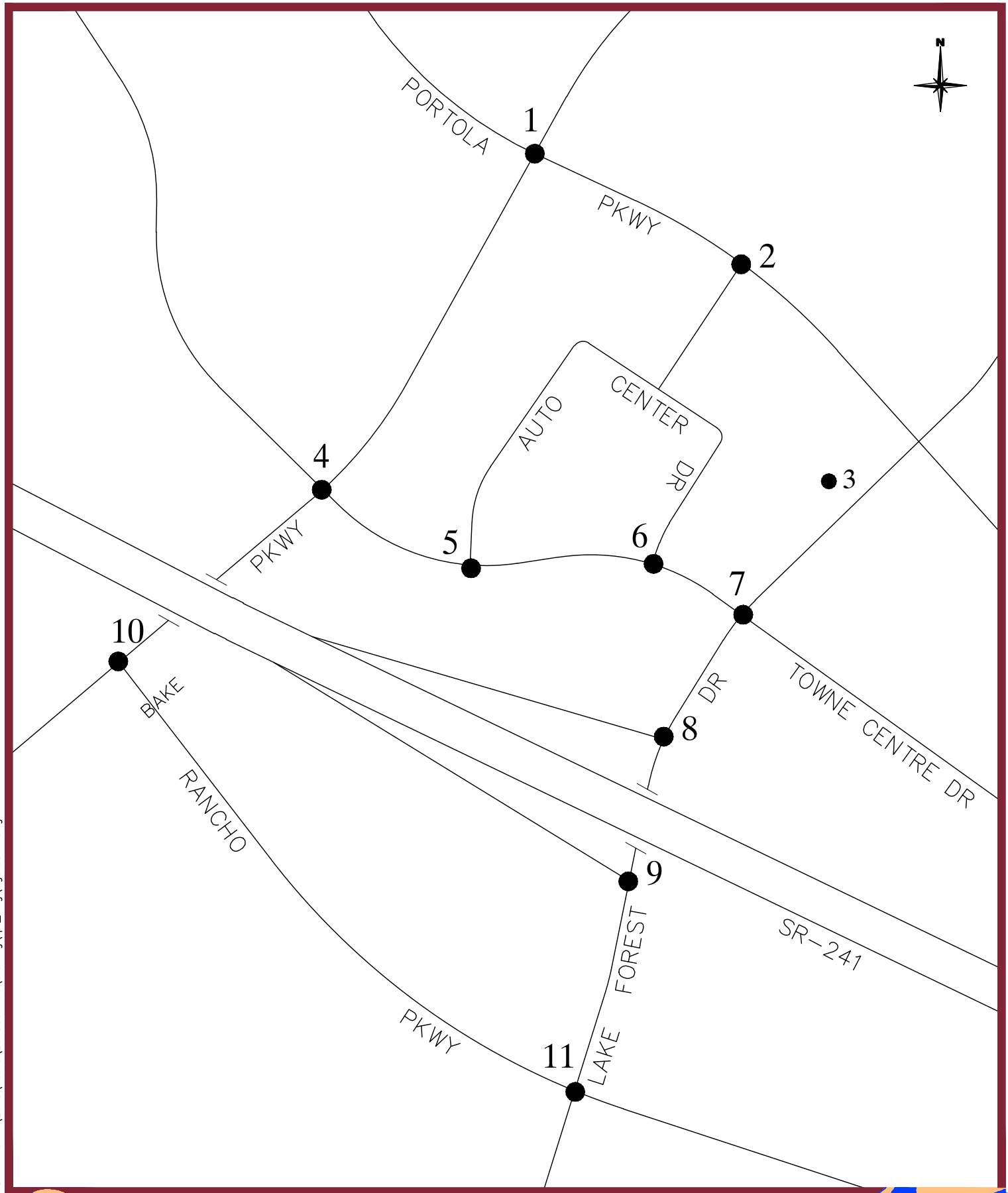
V/C (Left) = V/C (Through)

If approach has only one left-turn lane (shared lane), then:

$$\text{V/C (Left)} = \frac{\text{Left-Turn Volume}}{\text{Single Approach Lane Capacity}}$$

If this left-turn movement is determined to be a critical movement, the V/C (Left) value is posted in brackets on the ICU summary printout.

These same steps are carried out for shared through/right lanes. If full dedication of a shared through/right lane to the right-turn movement is warranted, the right-turn V/C value calculated in step three is checked against the RTOR and RTOG capacity. When an approach contains more than one shared lane (e.g., left/through and through/right), steps one and two listed above are carried out for the three turn movements combined. Step four is carried out if dedication is not warranted for either of the shared lanes. If dedication of one of the shared lanes is warranted to one movement or another, step three is carried out for the two movements involved, and then steps one through four are repeated for the two movements involved in the other shared lane.



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Intersection Location Map

Figure A-1

1. Bake & Portola

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	62	.04*	271	.16*
NBT	1.5	5100	174	{.05}	336	{.15}
NBR	1.5		256		642	
SBL	1	1700	120	.07	160	.09
SBT	2	3400	387	.11*	292	.09*
SBR	d	1700	220	.13	134	.08
EBL	1	1700	267	.16	181	.11*
EBT	3	5100	255	.05*	486	.10
EBR	d	1700	252	.15	139	.08
WBL	2	3400	730	.21*	459	.14
WBT	2	3400	320	.09	499	.15*
WBR	d	1700	60	.04	49	.03
Right Turn Adjustment			EBR	.07*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.53**		**.56**

Existing-Plus-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	69	.04*	266	.16
NBT	1.5	5100	177	{.05}	335	{.15}*
NBR	1.5		244		636	
SBL	1	1700	134	.08	167	.10*
SBT	2	3400	392	.12*	290	.09
SBR	d	1700	215	.13	136	.08
EBL	1	1700	271	.16*	182	.11*
EBT	3	5100	261	.05	506	.10
EBR	d	1700	241	.14	139	.08
WBL	2	3400	729	.21	488	.14
WBT	2	3400	336	.10*	492	.14*
WBR	d	1700	68	.04	63	.04
Right Turn Adjustment			EBR	.06*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.53**		**.55**

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	30	.02	150	.09
NBT	1.5	5100	170	{.05}*	280	{.13}*
NBR	1.5		200		630	
SBL	1	1700	160	.09*	180	.11*
SBT	2	3400	250	.07	260	.08
SBR	d	1700	370	.22	180	.11
EBL	1	1700	300	.18*	250	.15*
EBT	3	5100	370	.07	650	.13
EBR	d	1700	60	.04	60	.04
WBL	2	3400	770	.23	470	.14
WBT	2	3400	480	.14*	580	.17*
WBR	d	1700	70	.04	140	.08
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.51**		**.61**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	30	.02	150	.09
NBT	1.5	5100	170	{.05}*	300	{.13}*
NBR	1.5		200		630	
SBL	1	1700	150	.09*	180	.11*
SBT	2	3400	270	.08	270	.08
SBR	d	1700	370	.22	180	.11
EBL	1	1700	310	.18*	270	.16*
EBT	3	5100	370	.07	660	.13
EBR	d	1700	50	.03	60	.04
WBL	2	3400	770	.23	470	.14
WBT	2	3400	480	.14*	570	.17*
WBR	d	1700	70	.04	140	.08
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.51**		**.62**

1. Bake & Portola

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	40	.02	170	.10
NBT	1.5	5100	200	{.06}*	290	{.14}*
NBR	1.5		200		700	
SBL	1	1700	150	.09*	190	.11*
SBT	2	3400	260	.08	280	.08
SBR	d	1700	430	.25	220	.13
EBL	1	1700	380	.22*	320	.19*
EBT	3	5100	370	.07	760	.15
EBR	d	1700	90	.05	70	.04
WBL	2	3400	810	.24	480	.14
WBT	2	3400	580	.17*	630	.19*
WBR	d	1700	130	.08	70	.04
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.59**		**.68**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	40	.02	160	.09
NBT	1.5	5100	200	{.06}*	290	{.13}*
NBR	1.5		200		690	
SBL	1	1700	140	.08*	180	.11*
SBT	2	3400	250	.07	270	.08
SBR	d	1700	440	.26	230	.14
EBL	1	1700	390	.23*	330	.19*
EBT	3	5100	360	.07	780	.15
EBR	d	1700	90	.05	70	.04
WBL	2	3400	870	.26	490	.14
WBT	2	3400	580	.17*	630	.19*
WBR	d	1700	130	.08	60	.04
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.59**		**.67**

2. Auto Center & Portola

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	1	.00	7	.00
NBT	0	0	0		0	
NBR	1	1700	10	.01	61	.04
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	3	5100	675	.13	1290	.25
EBR	d	1700	4	.00	7	.00
WBL	1	1700	94	.06	30	.02
WBT	2	3400	1129	.33*	974	.29*
WBR	0	0	0		0	
Right Turn Adjustment					NBR	.01*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.38**		**.35**

Existing-Plus-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	35	.02*	30	.02*
NBT	0	0	0		0	
NBR	1	1700	10	.01	17	.01
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	3	5100	668	.13	1278	.25
EBR	d	1700	20	.01	41	.02
WBL	1	1700	45	.03	11	.01
WBT	2	3400	1119	.33*	987	.29*
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.40**		**.36**

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01*	30	.02*
NBT	0	0	0		0	
NBR	1	1700	10	.01	60	.04
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	3	5100	750	.15	1420	.28
EBR	d	1700	20	.01	30	.02
WBL	1	1700	90	.05	30	.02
WBT	2	3400	1350	.40*	1130	.33*
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.46**		**.40**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	40	.02*	30	.02*
NBT	0	0	0		0	
NBR	1	1700	30	.02	70	.04
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	3	5100	740	.15	1420	.28
EBR	d	1700	20	.01	40	.02
WBL	1	1700	100	.06	50	.03
WBT	2	3400	1350	.40*	1120	.33*
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.47**		**.40**

2. Auto Center & Portola

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01*	30	.02*
NBT	0	0	0		0	
NBR	1	1700	10	.01	30	.02
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	3	5100	730	.14	1610	.32
EBR	d	1700	20	.01	30	.02
WBL	1	1700	70	.04	10	.01
WBT	2	3400	1550	.46*	1120	.33*
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.52**		**.40**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	40	.02*	30	.02*
NBT	0	0	0		0	
NBR	1	1700	30	.02	70	.04
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	3	5100	730	.14	1590	.31*
EBR	d	1700	20	.01	40	.02
WBL	1	1700	100	.06	50	.03*
WBT	2	3400	1610	.47*	1120	.33
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.54**		**.41**

3. Lake Forest & Portola

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	42	.02	92	.05
NBT	2	3400	136	.04*	148	.04*
NBR	d	1700	191	.11	497	.29
SBL	1	1700	208	.12*	177	.10*
SBT	2	3400	198	.06	162	.05
SBR	d	1700	2	.00	11	.01
EBL	2	3400	9	.00	10	.00
EBT	3	5100	615	.12*	1297	.25*
EBR	d	1700	72	.04	83	.05
WBL	2	3400	440	.13*	410	.12*
WBT	3	5100	1173	.23	869	.17
WBR	d	1700	257	.15	161	.09
Right Turn Adjustment					NBR	.16*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.46**		**.72**

Existing-Plus-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	31	.02	84	.05
NBT	2	3400	133	.04*	154	.05*
NBR	d	1700	204	.12	493	.29
SBL	1	1700	201	.12*	174	.10*
SBT	2	3400	192	.06	158	.05
SBR	d	1700	1	.00	12	.01
EBL	2	3400	1	.00	15	.00
EBT	3	5100	613	.12*	1245	.24*
EBR	d	1700	77	.05	75	.04
WBL	2	3400	452	.13*	398	.12*
WBT	3	5100	1125	.22	871	.17
WBR	d	1700	257	.15	163	.10
Right Turn Adjustment					NBR	.15*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.46**		**.71**

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	40	.02	100	.06
NBT	2	3400	130	.04*	70	.02*
NBR	d	1700	190	.11	470	.28
SBL	1	1700	240	.14*	180	.11*
SBT	2	3400	140	.04	170	.05
SBR	d	1700	10	.01	20	.01
EBL	2	3400	20	.01	10	.00
EBT	3	5100	680	.13*	1430	.28*
EBR	d	1700	70	.04	60	.04
WBL	2	3400	570	.17*	570	.17*
WBT	3	5100	1360	.27	980	.19
WBR	d	1700	270	.16	190	.11
Right Turn Adjustment					NBR	.13*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.53**		**.76**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	40	.02	100	.06
NBT	2	3400	130	.04*	70	.02*
NBR	d	1700	210	.12	480	.28
SBL	1	1700	240	.14*	190	.11*
SBT	2	3400	130	.04	160	.05
SBR	d	1700	10	.01	20	.01
EBL	2	3400	10	.00	10	.00
EBT	3	5100	680	.13*	1420	.28*
EBR	d	1700	60	.04	60	.04
WBL	2	3400	560	.16*	570	.17*
WBT	3	5100	1350	.26	970	.19
WBR	d	1700	270	.16	200	.12
Right Turn Adjustment					NBR	.13*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.52**		**.76**

3. Lake Forest & Portola

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	40	.02	60	.04
NBT	2	3400	220	.06*	170	.05*
NBR	d	1700	140	.08	530	.31
SBL	1	1700	220	.13*	240	.14*
SBT	2	3400	150	.04	240	.07
SBR	d	1700	10	.01	20	.01
EBL	2	3400	10	.00	20	.01
EBT	3	5100	670	.13	1610	.32*
EBR	d	1700	60	.04	70	.04
WBL	2	3400	540	.16	630	.19*
WBT	3	5100	1560	.31*	1000	.20
WBR	d	1700	300	.18	210	.12
Right Turn Adjustment					NBR	.12*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.55**		**.87**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	40	.02	60	.04
NBT	2	3400	220	.06*	170	.05*
NBR	d	1700	120	.07	530	.31
SBL	1	1700	210	.12*	250	.15*
SBT	2	3400	150	.04	240	.07
SBR	d	1700	10	.01	20	.01
EBL	2	3400	10	.00	20	.01
EBT	3	5100	670	.13	1580	.31*
EBR	d	1700	60	.04	70	.04
WBL	2	3400	470	.14	630	.19*
WBT	3	5100	1600	.31*	1020	.20
WBR	d	1700	300	.18	210	.12
Right Turn Adjustment					NBR	.12*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.54**		**.87**

4. Bake & Towne Centre

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	248	.07*	483	.14
NBT	2	3400	504	.15	1258	.37*
NBR	d	1700	144	.08	216	.13
SBL	2	3400	13	.00	24	.01*
SBT	2	3400	1358	.40*	725	.21
SBR	d	1700	60	.04	85	.05
EBL	1	1700	13	.01	42	.02
EBT	1	1700	49	.03*	175	.10*
EBR	1	1700	354	.21	331	.19
WBL	1	1700	44	.03*	117	.07*
WBT	2	3400	75	.03	168	.06
WBR	0	0	13		38	
Right Turn Adjustment			EBR	.13*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.71**		**.60**

Existing-Plus-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	249	.07*	489	.14
NBT	2	3400	503	.15	1245	.37*
NBR	d	1700	139	.08	213	.13
SBL	2	3400	13	.00	24	.01*
SBT	2	3400	1357	.40*	749	.22
SBR	d	1700	55	.03	88	.05
EBL	1	1700	11	.01	46	.03
EBT	1	1700	48	.03*	193	.11*
EBR	1	1700	353	.21	314	.18
WBL	1	1700	55	.03*	113	.07*
WBT	2	3400	77	.03	166	.06
WBR	0	0	13		38	
Right Turn Adjustment			EBR	.13*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.71**		**.61**

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	190	.06*	380	.11
NBT	2	3400	410	.12	1040	.31*
NBR	d	1700	170	.10	230	.14
SBL	2	3400	30	.01	40	.01*
SBT	2	3400	1010	.30*	630	.19
SBR	d	1700	90	.05	80	.05
EBL	1	1700	10	.01	50	.03
EBT	1	1700	70	.04*	220	.13*
EBR	1	1700	280	.16	220	.13
WBL	1	1700	50	.03*	160	.09*
WBT	2	3400	70	.03	190	.07
WBR	0	0	20		50	
Right Turn Adjustment			EBR	.07*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.55**		**.59**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	190	.06*	370	.11
NBT	2	3400	400	.12	1060	.31*
NBR	d	1700	170	.10	240	.14
SBL	2	3400	30	.01	40	.01*
SBT	2	3400	1000	.29*	630	.19
SBR	d	1700	90	.05	80	.05
EBL	1	1700	10	.01	50	.03
EBT	1	1700	70	.04*	220	.13*
EBR	1	1700	280	.16	220	.13
WBL	1	1700	70	.04*	150	.09*
WBT	2	3400	70	.03	190	.07
WBR	0	0	20		50	
Right Turn Adjustment			EBR	.07*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.55**		**.59**

4. Bake & Towne Centre

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	200	.06*	410	.12
NBT	2	3400	450	.13	1130	.33*
NBR	d	1700	170	.10	240	.14
SBL	2	3400	30	.01	40	.01*
SBT	2	3400	1090	.32*	660	.19
SBR	d	1700	80	.05	80	.05
EBL	1	1700	10	.01	50	.03
EBT	1	1700	50	.03*	200	.12*
EBR	1	1700	320	.19	250	.15
WBL	1	1700	110	.06*	160	.09*
WBT	2	3400	90	.03	180	.07
WBR	0	0	20		50	
Right Turn Adjustment			EBR	.11*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.63**		**.60**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	200	.06*	410	.12
NBT	2	3400	450	.13	1120	.33*
NBR	d	1700	160	.09	230	.14
SBL	2	3400	30	.01	40	.01*
SBT	2	3400	1140	.34*	660	.19
SBR	d	1700	90	.05	80	.05
EBL	1	1700	10	.01	50	.03
EBT	1	1700	50	.03*	210	.12*
EBR	1	1700	310	.18	250	.15
WBL	1	1700	80	.05*	150	.09*
WBT	2	3400	80	.03	170	.06
WBR	0	0	20		50	
Right Turn Adjustment			EBR	.10*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.63**		**.60**

5. Auto Center & Towne Centre

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	1	.00	9	.01*
NBT	1	1700	0	.00	1	.00
NBR	0	0	0		7	
SBL	1	1700	1	.00	23	.01
SBT	1	1700	1	.02*	2	.02*
SBR	0	0	28		31	
EBL	1	1700	21	.01	64	.04*
EBT	2	3400	169	.05*	366	.11
EBR	0	0	6		5	
WBL	1	1700	7	.00	5	.00
WBT	2	3400	125	.04	259	.08*
WBR	0	0	5		26	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.12**		**.20**

Existing-Plus-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	2	.00	9	.01*
NBT	1	1700	0	.00	1	.01
NBR	0	0	0		8	
SBL	1	1700	2	.00	18	.01
SBT	1	1700	1	.03*	2	.02*
SBR	0	0	45		30	
EBL	1	1700	19	.01	72	.04*
EBT	2	3400	164	.05*	373	.11
EBR	0	0	6		5	
WBL	1	1700	7	.00	5	.00
WBT	2	3400	134	.04	263	.08*
WBR	0	0	3		25	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.13**		**.20**

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	0	.00	20	.01*
NBT	1	1700	0	.00	0	.01
NBR	0	0	0		10	
SBL	1	1700	10	.01	20	.01
SBT	1	1700	10	.03*	10	.02*
SBR	0	0	40		30	
EBL	1	1700	20	.01	60	.04*
EBT	2	3400	240	.07*	440	.13
EBR	0	0	10		10	
WBL	1	1700	10	.01*	10	.01
WBT	2	3400	180	.06	350	.11*
WBR	0	0	10		30	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.16**		**.23**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	0	.00	20	.01*
NBT	1	1700	0	.00	10	.01
NBR	0	0	0		10	
SBL	1	1700	10	.01	30	.02
SBT	1	1700	10	.04*	10	.03*
SBR	0	0	60		40	
EBL	1	1700	30	.02*	90	.05*
EBT	2	3400	180	.06	380	.11
EBR	0	0	10		10	
WBL	1	1700	10	.01	10	.01
WBT	2	3400	180	.06*	380	.12*
WBR	0	0	10		40	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.17**		**.26**

5. Auto Center & Towne Centre

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	0	.00	20	.01*
NBT	1	1700	0	.00	0	.01
NBR	0	0	0		10	
SBL	1	1700	10	.01	20	.01
SBT	1	1700	10	.03*	10	.02*
SBR	0	0	40		30	
EBL	1	1700	30	.02*	60	.04*
EBT	2	3400	200	.06	370	.11
EBR	0	0	10		10	
WBL	1	1700	10	.01	10	.01
WBT	2	3400	210	.06*	360	.11*
WBR	0	0	10		30	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.16**		**.23**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	0	.00	20	.01*
NBT	1	1700	0	.00	10	.01
NBR	0	0	0		10	
SBL	1	1700	10	.01	30	.02
SBT	1	1700	10	.04*	10	.03*
SBR	0	0	60		40	
EBL	1	1700	20	.01*	90	.05*
EBT	2	3400	210	.06	370	.11
EBR	0	0	10		10	
WBL	1	1700	10	.01	10	.01
WBT	2	3400	180	.06*	380	.12*
WBR	0	0	10		40	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.16**		**.26**

6. Auto Center E & Towne Centre

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	1	1700	8	.00	12	.01*
SBT	0	0	0		0	
SBR	1	1700	2	.00	5	.00
EBL	1	1700	5	.00	5	.00
EBT	2	3400	154	.05	388	.11*
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	2	3400	146	.05*	292	.09
WBR	0	0	13		17	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.10**		**.17**

Existing-Plus-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	1	1700	14	.01*	10	.01*
SBT	0	0	0		0	
SBR	1	1700	3	.00	5	.00
EBL	1	1700	4	.00	6	.00
EBT	2	3400	162	.05*	393	.12*
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	2	3400	141	.04	288	.09
WBR	0	0	7		17	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.11**		**.18**

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10	{.01}*	30	
NBT	1	1700	0	.01	0	.05*
NBR	0	0	10		50	
SBL	1	1700	10	.01	10	.01*
SBT	1	1700	0	.01*	0	.01
SBR	0	0	10		10	
EBL	1	1700	10	.01	10	.01
EBT	2	3400	220	.07*	450	.13*
EBR	0	0	10		0	
WBL	1	1700	50	.03*	30	.02*
WBT	2	3400	170	.05	370	.11
WBR	0	0	10		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.17**		**.26**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10	{.01}*	30	
NBT	1	1700	0	.01	0	.05*
NBR	0	0	10		50	
SBL	1	1700	20	.01	20	.01*
SBT	1	1700	0	.01*	0	.01
SBR	0	0	10		10	
EBL	1	1700	10	.01	10	.01
EBT	2	3400	180	.06*	430	.13*
EBR	0	0	10		0	
WBL	1	1700	50	.03*	30	.02*
WBT	2	3400	180	.06	390	.12
WBR	0	0	20		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.16**		**.26**

6. Auto Center E & Towne Centre

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10	{.01}*	30	
NBT	1	1700	0	.01	0	.05*
NBR	0	0	10		50	
SBL	1	1700	10	.01	10	.01*
SBT	1	1700	0	.01*	0	.01
SBR	0	0	10		10	
EBL	1	1700	10	.01	10	.01
EBT	2	3400	180	.06*	430	.13*
EBR	0	0	10		0	
WBL	1	1700	50	.03*	30	.02*
WBT	2	3400	210	.06	370	.11
WBR	0	0	10		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.16**		**.26**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10	{.01}*	30	
NBT	1	1700	0	.01	0	.05*
NBR	0	0	10		50	
SBL	1	1700	20	.01	20	.01*
SBT	1	1700	0	.01*	0	.01
SBR	0	0	10		10	
EBL	1	1700	10	.01	10	.01
EBT	2	3400	170	.05*	430	.13*
EBR	0	0	10		0	
WBL	1	1700	50	.03*	30	.02*
WBT	2	3400	180	.06	390	.12
WBR	0	0	20		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.15**		**.26**

7. Lake Forest & Towne Centre

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	94	.03*	199	.06*
NBT	2	3400	383	.11	702	.21
NBR	d	1700	193	.11	195	.11
SBL	2	3400	5	.00	6	.00
SBT	2	3400	701	.21*	615	.18*
SBR	d	1700	13	.01	24	.01
EBL	1	1700	0	.00	19	.01
EBT	1	1700	116	.07*	214	.13*
EBR	1	1700	51	.03	161	.09
WBL	1	1700	57	.03*	144	.08*
WBT	2	3400	49	.02	114	.04
WBR	0	0	8		7	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.39**		**.50**

Existing-Plus-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	80	.02*	195	.06*
NBT	2	3400	382	.11	697	.21
NBR	d	1700	201	.12	190	.11
SBL	2	3400	3	.00	6	.00
SBT	2	3400	713	.21*	591	.17*
SBR	d	1700	14	.01	24	.01
EBL	1	1700	0	.00	19	.01
EBT	1	1700	114	.07*	212	.12*
EBR	1	1700	57	.03	163	.10
WBL	1	1700	40	.02*	156	.09*
WBT	2	3400	52	.02	111	.03
WBR	0	0	8		7	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.37**		**.49**

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	100	.03*	250	.07*
NBT	2	3400	360	.11	530	.16
NBR	d	1700	180	.11	200	.12
SBL	2	3400	10	.00	10	.00
SBT	2	3400	640	.19*	700	.21*
SBR	d	1700	110	.06	80	.05
EBL	1	1700	20	.01	90	.05
EBT	1	1700	130	.08*	220	.13*
EBR	1	1700	60	.04	190	.11
WBL	1	1700	60	.04*	140	.08*
WBT	2	3400	50	.02	100	.03
WBR	0	0	10		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.39**		**.54**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	90	.03*	270	.08*
NBT	2	3400	370	.11	540	.16
NBR	d	1700	190	.11	200	.12
SBL	2	3400	10	.00	10	.00
SBT	2	3400	620	.18*	700	.21*
SBR	d	1700	110	.06	70	.04
EBL	1	1700	20	.01	100	.06
EBT	1	1700	130	.08*	220	.13*
EBR	1	1700	70	.04	180	.11
WBL	1	1700	10	.01*	140	.08*
WBT	2	3400	50	.03	110	.04
WBR	0	0	60	.04	10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.35**		**.55**

7. Lake Forest & Towne Centre

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	120	.04*	250	.07*
NBT	2	3400	400	.12	650	.19
NBR	d	1700	190	.11	200	.12
SBL	2	3400	10	.00	10	.00
SBT	2	3400	620	.18*	770	.23*
SBR	d	1700	100	.06	80	.05
EBL	1	1700	20	.01	100	.06
EBT	1	1700	110	.06*	200	.12*
EBR	1	1700	60	.04	200	.12
WBL	1	1700	60	.04*	140	.08*
WBT	2	3400	50	.02	100	.03
WBR	0	0	10		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.37**		**.55**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	100	.03*	250	.07*
NBT	2	3400	380	.11	660	.19
NBR	d	1700	190	.11	200	.12
SBL	2	3400	10	.00	10	.00
SBT	2	3400	560	.16*	810	.24*
SBR	d	1700	100	.06	80	.05
EBL	1	1700	30	.02	100	.06
EBT	1	1700	110	.06*	200	.12*
EBR	1	1700	60	.04	200	.12
WBL	1	1700	60	.04*	140	.08*
WBT	2	3400	50	.02	110	.04
WBR	0	0	10		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.34**		**.56**

8. Lake Forest & SR-241 NB On-Ramp

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	107	.03*	155	.05
NBT	2	3400	655	.19	1104	.32*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	760	.22*	764	.22
SBR	1	1700	81	.05	178	.10
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.30** **.37**

Existing-Plus-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	117	.03*	151	.04
NBT	2	3400	648	.19	1090	.32*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	769	.23*	752	.22
SBR	1	1700	74	.04	179	.11
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.31** **.37**

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	110	.03*	190	.06*
NBT	2	3400	640	.19	860	.25
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	620	.18*	670	.20*
SBR	1	1700	100	.06	270	.16
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.26** **.31**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	120	.04*	200	.06
NBT	2	3400	640	.19	890	.26*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	610	.18*	660	.19
SBR	1	1700	110	.06	260	.15
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.27** **.31**

8. Lake Forest & SR-241 NB On-Ramp

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	130	.04	400	.12*
NBT	2	3400	680	.20*	990	.29
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	560	.16	750	.22*
SBR	1	1700	80	.05	300	.18
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.25**		**.39**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	120	.04*	400	.12*
NBT	2	3400	660	.19	1010	.30
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	550	.16*	730	.21*
SBR	1	1700	90	.05	300	.18
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.25**		**.38**

9. Lake Forest & SR-241 SB Off-Ramp

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	611	.18	1191	.35*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	801	.24*	752	.22
SBR	0	0	0		0	
EBL	2	3400	153	.05*	88	.03*
EBT	0	0	0		0	
EBR	1	1700	246	.14	162	.10
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.09*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.43**		**.43**

Existing-Plus-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	617	.18	1178	.35*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	810	.24*	740	.22
SBR	0	0	0		0	
EBL	2	3400	151	.04*	84	.02*
EBT	0	0	0		0	
EBR	1	1700	249	.15	169	.10
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.11*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.44**		**.42**

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	560	.16	940	.28*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	650	.19*	650	.19
SBR	0	0	0		0	
EBL	2	3400	200	.06*	140	.04*
EBT	0	0	0		0	
EBR	1	1700	270	.16	230	.14
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.10*	EBR	.03*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.40**		**.40**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	580	.17	950	.28*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	640	.19*	650	.19
SBR	0	0	0		0	
EBL	2	3400	200	.06*	150	.04*
EBT	0	0	0		0	
EBR	1	1700	270	.16	230	.14
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.10*	EBR	.03*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.40**		**.40**

9. Lake Forest & SR-241 SB Off-Ramp

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	650	.19*	1280	.38*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	590	.17	730	.21
SBR	0	0	0		0	
EBL	2	3400	170	.05*	150	.04*
EBT	0	0	0		0	
EBR	1	1700	550	.32	260	.15
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.25*		
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.54** **.47**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	640	.19*	1280	.38*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	590	.17	720	.21
SBR	0	0	0		0	
EBL	2	3400	160	.05*	160	.05*
EBT	0	0	0		0	
EBR	1	1700	550	.32	260	.15
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.25*		
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.54** **.48**

10. Bake & Rancho N

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	753	.22	1798	.53*
NBR	d	1700	98	.06	240	.14
SBL	1	1700	47	.03	157	.09*
SBT	2	3400	1716	.50*	1013	.30
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	141	.04*	125	.04*
WBT	0	0	0		0	
WBR	2	3400	69	.02	155	.05
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.59** **.71**

Existing-Plus-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	751	.22	1792	.53*
NBR	d	1700	106	.06	245	.14
SBL	1	1700	48	.03	141	.08*
SBT	2	3400	1724	.51*	1033	.30
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	134	.04*	122	.04*
WBT	0	0	0		0	
WBR	2	3400	66	.02	152	.04
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.60** **.70**

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	670	.20	1480	.44*
NBR	d	1700	320	.19	480	.28
SBL	1	1700	50	.03	130	.08*
SBT	2	3400	1300	.38*	870	.26
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	520	.15*	340	.10*
WBT	0	0	0		0	
WBR	2	3400	40	.01	170	.05
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.58** **.67**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	660	.19	1500	.44*
NBR	d	1700	330	.19	500	.29
SBL	1	1700	50	.03	130	.08*
SBT	2	3400	1310	.39*	860	.25
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	510	.15*	350	.10*
WBT	0	0	0		0	
WBR	2	3400	30	.01	180	.05
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.59** **.67**

10. Bake & Rancho N

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	700	.21	1540	.45*
NBR	d	1700	580	.34	680	.40
SBL	1	1700	90	.05	160	.09*
SBT	2	3400	1430	.42*	910	.27
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	520	.15*	620	.18*
WBT	0	0	0		0	
WBR	2	3400	50	.01	240	.07
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.62**		**.77**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	690	.20	1540	.45*
NBR	d	1700	590	.35	680	.40
SBL	1	1700	90	.05	150	.09*
SBT	2	3400	1450	.43*	900	.26
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	520	.15*	630	.19*
WBT	0	0	0		0	
WBR	2	3400	50	.01	230	.07
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.63**		**.78**

11. Lake Forest & Rancho

Existing Counts

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	132	.08*	141	.08
NBT	2	3400	540	.16	912	.27*
NBR	d	1700	70	.04	22	.01
SBL	1	1700	108	.06	122	.07*
SBT	2	3400	779	.23*	720	.21
SBR	d	1700	114	.07	91	.05
EBL	1	1700	24	.01	122	.07*
EBT	1	1700	37	.02*	29	.02
EBR	1	1700	42	.02	115	.07
WBL	1	1700	9	.01*	50	.03
WBT	2	3400	6	.00	69	.02*
WBR	1	1700	10	.01	141	.08
Right Turn Adjustment					WBR	.01*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.39**		**.49**

Existing-Plus-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	147	.09*	145	.09
NBT	2	3400	532	.16	899	.26*
NBR	d	1700	66	.04	29	.02
SBL	1	1700	112	.07	123	.07*
SBT	2	3400	787	.23*	713	.21
SBR	d	1700	113	.07	95	.06
EBL	1	1700	32	.02*	130	.08*
EBT	1	1700	38	.02	20	.01
EBR	1	1700	53	.03	115	.07
WBL	1	1700	8	.00	55	.03
WBT	2	3400	1	.00*	69	.02*
WBR	1	1700	17	.01	132	.08
Right Turn Adjustment					WBR	.01*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.39**		**.49**

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	80	.05	130	.08
NBT	2	3400	490	.14*	800	.24*
NBR	d	1700	340	.20	450	.26
SBL	1	1700	250	.15*	230	.14*
SBT	2	3400	750	.22	720	.21
SBR	d	1700	60	.04	60	.04
EBL	1	1700	10	.01	40	.02
EBT	1	1700	210	.12*	450	.26*
EBR	1	1700	40	.02	70	.04
WBL	1	1700	250	.15*	320	.19*
WBT	2	3400	550	.16	370	.11
WBR	1	1700	60	.04	300	.18
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.61**		**.88**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	80	.05	120	.07
NBT	2	3400	510	.15*	810	.24*
NBR	d	1700	340	.20	450	.26
SBL	1	1700	260	.15*	230	.14*
SBT	2	3400	740	.22	710	.21
SBR	d	1700	60	.04	60	.04
EBL	1	1700	10	.01	40	.02
EBT	1	1700	210	.12*	440	.26*
EBR	1	1700	40	.02	70	.04
WBL	1	1700	250	.15*	310	.18*
WBT	2	3400	540	.16	370	.11
WBR	1	1700	60	.04	300	.18
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.62**		**.87**

11. Lake Forest & Rancho

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	160	.09	190	.11
NBT	2	3400	540	.16*	910	.27*
NBR	d	1700	450	.26	660	.39
SBL	1	1700	320	.19*	280	.16*
SBT	2	3400	740	.22	760	.22
SBR	d	1700	230	.14	110	.06
EBL	1	1700	20	.01	180	.11
EBT	2	3400	350	.10*	730	.21*
EBR	1	1700	60	.04	140	.08
WBL	2	3400	560	.16*	480	.14*
WBT	2	3400	750	.22	610	.18
WBR	d	1700	80	.05	400	.24
Right Turn Adjustment					NBR	.01*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.66**		**.84**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	150	.09	190	.11
NBT	2	3400	530	.16*	930	.27*
NBR	d	1700	460	.27	650	.38
SBL	1	1700	320	.19*	270	.16*
SBT	2	3400	730	.21	750	.22
SBR	d	1700	230	.14	110	.06
EBL	1	1700	30	.02	180	.11
EBT	2	3400	360	.11*	730	.21*
EBR	1	1700	60	.04	140	.08
WBL	2	3400	570	.17*	480	.14*
WBT	2	3400	740	.22	620	.18
WBR	d	1700	90	.05	390	.23
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.68**		**.83**